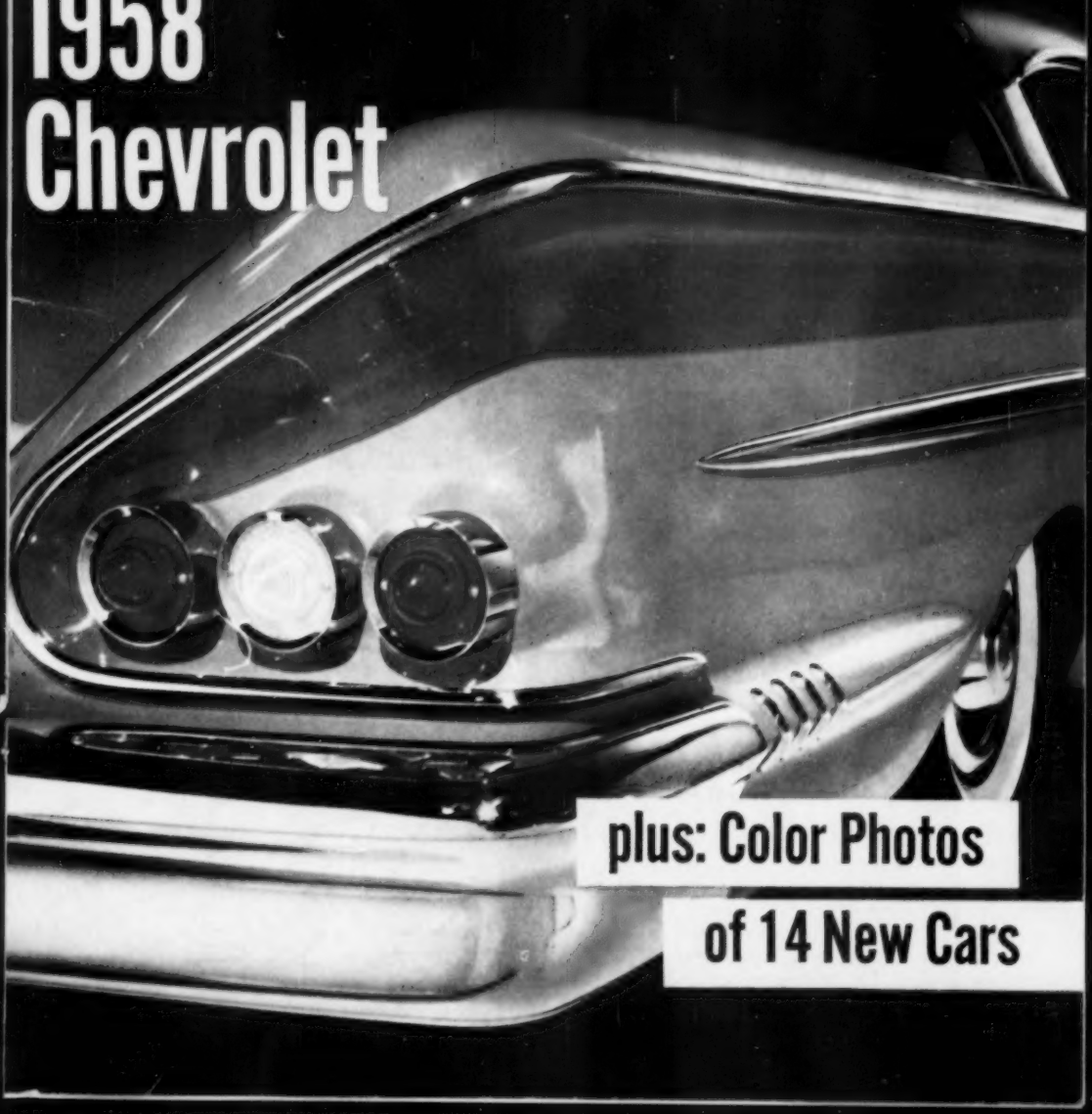
POPULAR SCIENCE

NOVEMBER · 35c *Monthly*

Your first look at the

1958 Chevrolet



plus: Color Photos of 14 New Cars

Do repairs and electrical work in a jiffy

with a Weller SOLDERING KIT

featuring the easiest-to-use soldering tool ever designed . . . the Weller Soldering Gun

INSTANT HEAT
NO WAITING

ONLY $7.95
Model 8100K

FINGERTIP ON-OFF CONTROL

You hold it like a pistol. Merely touch the trigger and presto . . . soldering tip heats instantly . . . dual spotlights flick on to light up your work. There's nothing else like it for quick, accurate soldering . . . even in dark and difficult places. Guaranteed for 1 year. UL approved.

HERE'S WHAT YOU GET:

- **Weller Soldering Gun—over 100 watts**
- **Wire Bristle Cleaning Brush**
- **Generous Supply of Solder**
- **Soldering Tool**

Cutting and Smoothing Tips available at slight extra cost

Weller HEAVY DUTY SOLDERING KIT

- **Weller 250 Watt Soldering Gun**
- **Sturdy Metal Storage Case**
- **Generous Supply of Solder**
- **Cutting Tip • Smoothing Tip**
- **Tip Interchange Wrench**
- **2 Instruction Booklets**

Weller 250 Watt Soldering Gun alone . . . $12.95 (Model 8250A)

ONLY $14.95
Model 8250-K

WELLER ELECTRIC CORPORATION, EASTON, PA.

ATTACK!

HEADED BY THE NEW M-20 ARMORED CAR

Bring more front-line realism to your U.S. Army Combat Team built from Revell Authentic Kits

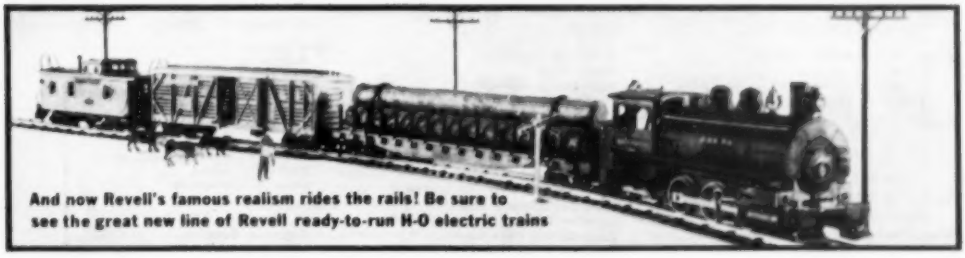
Send this rugged little reconnaissance vehicle into the thick of battle! Roll it along on its six movable wheels, swing the ring-mounted anti-aircraft machine gun around to cover all directions! Revell's scale model duplicates every authentic detail of the M-20, carries hand tools and a supply of land mines on side racks. There's an action crew of four, plus a rifleman and mine-detector man, included in the 65-piece kit. Start building yours today! 89¢

Have you put together all of Revell's U.S. Army combat models pictured above?

Long Tom gun with tractor $1.98
M-4 Sherman Tank $1.49
Radio Jeep and Communications Trailer 79c
G.I. Battle Action Figure Set 98c

Revell
Authentic Kits

wherever hobby kits are sold

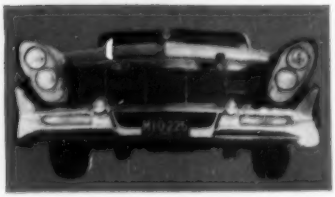


And now Revell's famous realism rides the rails! Be sure to see the great new line of Revell ready-to-run H-O electric trains

Founded in 1872 Vol. 171: No. 5 *Mechanics and Handicraft* REG. U. S. PAT. OFF.

Popular Science Monthly

November, 1957



A glittering roundup of the new cars—four-eyed, longer and lower—that some 6,000,000 Americans will drive off the showroom floor in '58

AUTOMOBILE NEWS

1958 Auto Showroom:
Full-Color Photos of the New Cars · 93

Chevrolet: Lower, Longer, Livelier · 105
Buick: New Look, New Transmission · 111
Lincoln: World's Longest Car · 114
Independents: Engineered for Economy · 118
Chrysler Family: New Series of Engines · 121

PS SHOPPING REPORTS

'58 TV Sets Have New, Shorter Tubes · 144
How to Buy a Tape Recorder · 208

WORLD OF SCIENCE

The Journey No Man Has Ever Made · 149
Checking Your School Science Labs · 154
How Much Like You Will He Be? · 163

THE NEWS IN PICTURES

First Air-to-Air A-Rocket Is Fired · 124
Volkswagen Gets New Rear Window · 126
New Ejection Seats Make Flying Safer · 130
8-mm. Camera Shows Its Own Movies · 134
Ancient Ape May Have Stood 15 Feet · 137
Now It's Square Bubbles · 139

Editor: HOWARD ALLAWAY

Managing Editor
FRANK ROWSOME JR.

Assistant Managing Editors
Charles M. Garvey
Kendall W. Goodwyn
Robert P. Stevenson

Senior Editors
Devon Francis
Martin Mann
Everett H. Ortner
Harry Walton

Technical Editor
Hubert Luckett

West Coast Editor
Wesley S. Griswold

Associate Editors
Erik H. Arctander
Alden P. Armagnac
Henry B. Comstock
Frank Dorr
Sheldon M. Gallager
Herbert O. Johansen
Herbert R. Pfister
Maryann Smith
Ruth Westphal
Richard A. Yahraes

Editorial Assistants
Rosa Lee Beeland (Chief)
Annette Krauss (Research)
Anna Dallas, Bebe Lipson,
Roberta Marks, Georgette Sparks

Art Director
HOWARD C. JENSEN

Art Editors
Herbert Anthony
Reginald A. Hawley
Harry Samuels

Art Associates
Al Heighington
Eric A. Karminski Jr.
Henry W. Kazmirowski
Richard J. Meyer
Dana B. Rasmussen

Photography
W. W. Morris (Chief)
Robert D. Borst
Orlando Guerra

America's Leading New-Idea Magazine for 85 Years

SPECIAL FEATURES

Hidden Reasons Why You Buy a Car · 89
The Fortunate Disaster of the P6M · 158
Gus Goes Out on a Limb · 202
The Strange Case of the TV Phantoms · 225

Report from the test pilot's seat: How—and why—the Navy's fastest flying boat exploded

FOR HOME AND SHOP

How You Can Use Molded Drawers · 170
10 Uses for Steel Balls · 175
Practical Guide to Wire Mesh · 180
PS Fix-It File: Iron Cords · 185
New Power Tools Are Styled for Home · 188
New Router Has Economy Price Tag · 191
First Aid for Your Car Horn · 195
New Home Wiring Screws to the Wall · 213

New electric outlets made easy! These strips screw to the wall to put 'em where you want 'em

WHAT'S NEW IN . . .

Keeping the Home Shipshape · 16
Aids to Modern Living · 152
Ideas from the Inventors · 167
Handyman Products · 178
Tools for Your Shop · 187
Hints from the Model Garage · 200
Car Accessories · 207

EVERY MONTH . . .

PS Readers Talk Back · 4
Prize Projects by PS Readers · 14
I'd Like to See Them Make · 18
You Ought to Know · 23
Wordless Workshop · 176
PS Shop Notebook · 193
Short Cuts and Tips · 231

Publisher
RALPH H. FLYNN

Advertising Manager
LEE P. ADAMS

Circulation Director
EUGENE WATSON

EDITORIAL OFFICES:
353 Fourth Ave., New York 10, N.Y.

ADVERTISING OFFICES:
NEW YORK—353 Fourth Ave.
CHICAGO—360 North Michigan Ave.
DETROIT—820 Book Bldg.
SAN FRANCISCO—114 Sansome St.
CLEVELAND—636 B. F. Keith Bldg.
LOS ANGELES—1127 Wilshire Blvd.
PORTLAND, ORE.—520 S.W. Sixth Ave.

SUBSCRIPTION SERVICE:
Address all subscriptions and correspondence concerning them to: Subscription Department, 353 Fourth Ave., New York 10, N. Y. Allow four weeks' notice for change of address. Please give both old and new addresses, including zone numbers.

Published monthly at 353 Fourth Avenue, New York 10, N. Y., by Popular Science Publishing Co., Inc., Godfrey Hammond, Chairman of the Board; Ralph H. Flynn, President and Treasurer; Franklin E. Parker Jr., Secretary; Eugene Watson, Vice President. Second-class mail privileges authorized at New York, N. Y., and Dayton, Ohio. Entered as second-class matter at the Post Office Department, Canada. Printed in U.S.A.

Copyright, 1957, by Popular Science Publishing Co., Inc. All rights reserved in the United States, Great Britain, and in all the countries participating in the International Copyright Convention and Pan-American Copyright Convention.

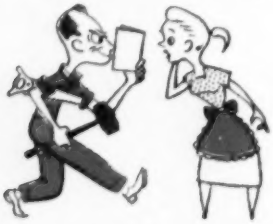
Single copy 35¢. Subscriptions to United States, its possessions, and Canada: 1 year $3.40 (2 years $6.00, 3 years $8.00). Elsewhere, 1 year $6.00 (2 years $11.00, 3 years $16.00).

PS Readers

TALK BACK

PS Gives Him Big Ideas

SAY, that home-expansion section ["New Living Space for Your Home," Sept.] was a honey. I've already figured out how I can put the bedrooms in the cellar, convert the garage into the big living room we've always wanted, and



make the porch over into a kitchen-dining room. This will leave our present living quarters empty so that I can rent them out and retire.

Seriously, this is one issue I'll save. It contains some of the most practical home-expansion information I have seen. With the kids growing and demanding rooms (if not suites) of their own, expand is what we have to do.

J. S. SPENCER, San Pedro, Calif.

Booklet Answers His Questions

THE booklet on concrete blocks [Aug.] was very enlightening. For some time I have considered the idea of building a home of block. The ones I have seen were sturdy, neat looking and relatively inexpensive. Your booklet answered the questions I had in mind.

STEVE MOROSO, Pittsburgh

Gauges Save the Engine

AFTER reading "I Like the Gauges Detroit Left Out," [Nov. '55] I installed a set in my 1955 Ford that paid off.

While driving in Connecticut, I noticed a slight drop in oil pressure but drove on. It continued to drop to 10-to-15 psi at 50 m.p.h. I stopped—no oil. The red light did flash once when I stopped, but not while I was driving. I replaced the oil and drove on home thankful that I saved a good engine (25,000 miles on it then). A short time later my ammeter showed only a low charge, tipping me off to get my generator regulator adjusted. An investment of $10 has saved me many times that money—thanks to PS.

ALBERT F. KLARE, Everett, Mass.

More Uses for Tape Recorders

"WHY Buy a Tape Recorder?" [Sept.] makes me think that a tape recorder would be useful to DXers (hobbyists who like to listen to faraway places) and to other short-wave radio fans for making reception reports of broadcasts from different short-wave stations.

In this way the sending stations could hear their broadcasts over again just as they came over the short-wave radio in the countries to which they were beamed. This would be more accurate than a written report, and they could get more information out of a taped report.

A. KEITH FRITZSCHE, Hamilton, Ohio

. . . I was a little disappointed that author Henry Comstock did not mention corresponding by tape through the various clubs of tape-recorder owners. I happen to be a district deputy for the Voicespondence club, which has headquarters at Noel, Va. The club has 12 districts and a membership of about 840.

L. ROBERT CROUSE, Perryville, Md.

Music Box to Alarm Speeder

THOSE speed alarms you have in the August issue are very interesting, but they have nothing on my Uncle's invention. Way back before the war my Uncle had one of those cars that showed a red light if you went over 50 m.p.h. But he wasn't satisfied. (I think it was because he never drove below 50 and didn't think it was doing him any good.)

Anyhow, he wired up an electric music box to the speedometer. Every time you

Is your car "smoking behind your back"?

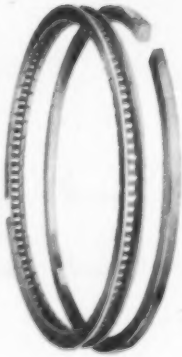
Then see your

DOCTOR OF MOTORS

Blue smoke usually means trouble—engine wear that's taking its toll in lost power, performance—wasted oil, fuel and money! What to do? See your Doctor of Motors—your skilled mechanic—the man who knows how to restore engine efficiency and that "New Car Feel."

Doctors of Motors everywhere install Perfect Circle 2-in-1 Chrome piston rings to assure top performance. Perfect Circles are plated with thick, solid chrome that resists wear—*more than doubles* the life of cylinders, pistons and rings.

For long life and responsive power with positive oil control, ask your mechanic to install Perfect Circle piston rings! Perfect Circle Corporation, Hagerstown, Indiana; The Perfect Circle Co., Ltd., 888 Don Mills Road, Don Mills, Ont.



You'll be surprised how quickly and economically your dependable Doctor of Motors can bring back a "New Car Feel" to your car. See him now!

PERFECT CIRCLE

2-IN-1 CHROME PISTON RINGS

restore that New Car Feel

BURIED ALIVE!

SIX YEARS ON THE SAME JOB WITH NEVER AN ACCIDENT... AND THEN ONE MORNING...

FREE!

I.C.S. CAREER KIT

Send coupon now... get all three books

INTERNATIONAL CORRESPONDENCE SCHOOLS
BOX 21968L SCRANTON 15, PA.

HERE'S WHERE YOU COME IN! LET I.C.S. SHOW YOU THE WAY TO MORE PAY, RAPID ADVANCEMENT, REAL JOB SECURITY!

MAIL THIS COUPON TODAY!

1 "HOW TO SUCCEED"
A 32-page gold mine of ideas

2 CAREER CATALOG
Opportunities in the field that interests you most

3 SAMPLE LESSON (MATH)
Shows the famous step-by-step I. C. S. teaching method

For Real Job Security—Get an I. C. S. Diploma! I. C. S., Scranton 15, Penna. Accredited Member, National Home Study Council

INTERNATIONAL CORRESPONDENCE SCHOOLS

ICS

BOX 21968L, SCRANTON 15, PENNA. (Partial list of 257 courses)

Without cost or obligation, send me "HOW to SUCCEED" and the opportunity booklet about the field BEFORE which I have marked X (plus sample lesson):

ARCHITECTURE and BUILDING CONSTRUCTION
- ☐ Air Conditioning
- ☐ Architecture
- ☐ Arch. Drawing and Designing
- ☐ Building Contractor
- ☐ Building Estimator
- ☐ Carpentry and Millwork
- ☐ Carpenter Foreman
- ☐ Heating
- ☐ Interior Decoration
- ☐ Painting Contractor
- ☐ Plumbing
- ☐ Reading Arch. Blueprints

ART
- ☐ Commercial Art
- ☐ Magazine & Book Illus.
- ☐ Show Card and Sign Lettering
- ☐ Sketching and Painting

AUTOMOTIVE
- ☐ Automobiles
- ☐ Auto Body Rebuilding and Refinishing
- ☐ Auto Engine Tuneup
- ☐ Auto Technician

AVIATION
- ☐ Aero-Engineering Technology
- ☐ Aircraft & Engine Mechanic

BUSINESS
- ☐ Accounting
- ☐ Advertising
- ☐ Business Administration
- ☐ Business Management
- ☐ Cost Accounting
- ☐ Creative Salesmanship
- ☐ Managing a Small Business
- ☐ Professional Secretary
- ☐ Public Accounting
- ☐ Purchasing Agent
- ☐ Salesmanship
- ☐ Salesmanship and Management
- ☐ Traffic Management

CHEMICAL
- ☐ Analytical Chemistry
- ☐ Chemical Engineering
- ☐ Chem. Lab. Technician
- ☐ Elements of Nuclear Energy
- ☐ General Chemistry
- ☐ Natural Gas Prod. and Trans.
- ☐ Petroleum Prod. and Engr.
- ☐ Professional Engineer (Chem)
- ☐ Pulp and Paper Making

CIVIL ENGINEERING
- ☐ Civil Engineering
- ☐ Construction Engineering
- ☐ Highway Engineering
- ☐ Professional Engineer (Civil)
- ☐ Reading Struc. Blueprints
- ☐ Structural Engineering
- ☐ Surveying and Mapping

DRAFTING
- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Drafting Machine Design
- ☐ Electrical Drafting
- ☐ Mechanical Drafting
- ☐ Sheet Metal Drafting
- ☐ Structural Drafting

ELECTRICAL
- ☐ Electrical Engineering
- ☐ Elec. Engr. Technician
- ☐ Elec. Light and Power
- ☐ Practical Electrician
- ☐ Practical Lineman
- ☐ Professional Engineer (Elec)

HIGH SCHOOL
- ☐ High School Diploma
- ☐ Good English
- ☐ High School Mathematics
- ☐ Short Story Writing

LEADERSHIP
- ☐ Industrial Foremanship
- ☐ Industrial Supervision
- ☐ Personnel-Labor Relations
- ☐ Supervision

MECHANICAL and SHOP
- ☐ Diesel Engines
- ☐ Gas-Elec. Welding
- ☐ Industrial Engineering
- ☐ Industrial Instrumentation
- ☐ Industrial Metallurgy
- ☐ Industrial Safety
- ☐ Machine Design
- ☐ Machine Shop Practice
- ☐ Mechanical Engineering
- ☐ Professional Engineer (Mech)
- ☐ Quality Control
- ☐ Reading Shop Blueprints
- ☐ Refrigeration and Air Conditioning
- ☐ Tool Design ☐ Tool Making

RADIO, TELEVISION
- ☐ General Electronics Tech.
- ☐ Industrial Electronics
- ☐ Practical Radio-TV Eng'r'g
- ☐ Practical Telephony
- ☐ Radio-TV Servicing

RAILROAD
- ☐ Car Inspector and Air Brake
- ☐ Diesel Electrician
- ☐ Diesel Engr. and Fireman
- ☐ Diesel Locomotive

STEAM and DIESEL POWER
- ☐ Combustion Engineering
- ☐ Power Plant Engineer
- ☐ Stationary Diesel Engr.
- ☐ Stationary Fireman

TEXTILE
- ☐ Carding and Spinning
- ☐ Cotton Manufacture
- ☐ Cotton Warping and Weaving
- ☐ Loom Fixing Technician
- ☐ Textile Designing
- ☐ Textile Finishing & Dyeing
- ☐ Throwing
- ☐ Warping and Weaving
- ☐ Worsted Manufacturing

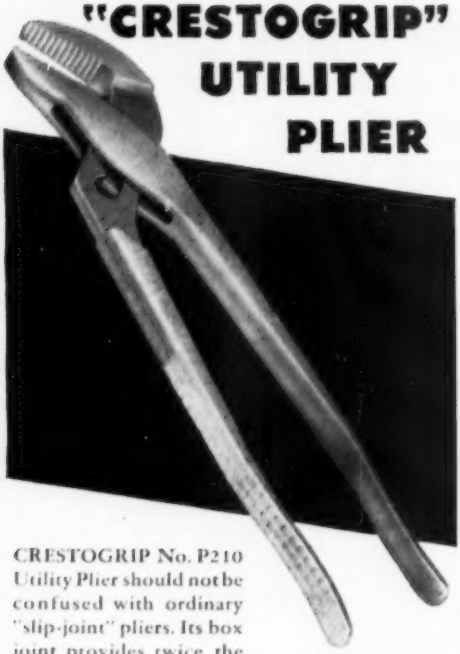
Name _____ Age _____ Home Address _____

City _____ Zone _____ State _____ Working Hours _____ A.M. to P.M. _____

Occupation _____

Canadian residents send coupon to International Correspondence Schools, Canadian, Ltd., Montreal, Canada. . . . Special tuition rates to members of the U. S. Armed Forces.

"CRESTOGRIP" UTILITY PLIER



CRESTOGRIP No. P210 Utility Plier should not be confused with ordinary "slip-joint" pliers. Its box joint provides twice the strength of the conventional lap joint and eliminates sideways twist and strain. Grips flat, square, hex or round objects with powerful leverage. Adjusts to four positions up to 1½" capacity. It has no rivet projections and measures only ½" at its thickest point. Finished in rust-resistant zinc plate.

ARTISAN'S TIE CLASP

● For the craftsman or hobbyist who is proud of his skill, a handsome gold-plated clasp designed by a leading jewelry manufacturer. A $2.00 value... yours for 50¢, post paid. Write Crescent Tool Co., Jamestown, N. Y., Dept. S.

Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

hit 80 (I never saw it work because I don't think his car could go that fast)

the music box was supposed to play—guess what?—"Nearer My God to Thee."

L. C. Robbins, Dallas

Challenges Co-op Pioneer Claim

You state that Antioch College pioneered the "co-op" work-while-you-learn system of education ["You *Can* Afford to Send Your Child to College," Aug.]. As a matter of record, in 1956 the University of Cincinnati celebrated its 50th anniversary of continuous cooperative education at a meeting attended by many leaders of education and industry.

Today U. C. has over 3,000 students in three of its colleges following a compulsory five-year co-op program and has working arrangements with over 500 different firms. We believe that U. C. pioneered the co-op system as conceived by Dean Herman Schneider in 1905.

T. J. O'Leary, Ch.E. '52, Metairie, La.

Mechanical Monsters Made Real

We believe that you have done an outstanding job of describing "The Mechanical Monsters That Build Our Roads" [July]. Because of your efforts, more people will understand what equipment is doing which job on the construction projects that are making the interstate highway system possible.

Paul Price, Caterpillar Tractor Co., Peoria, Ill.

A 1924 Flint Convertible?

While scanning the drawing that illustrated "Gus Tackles an Antique" [May], I beheld a 1924 Flint touring car, and a remarkable one, indeed. The picture shows this Flint with top folded down.

Since I am an owner of a 1924 Flint touring car in original condition, I am curious to know how that top came to be folded down. Mine is a permanent top that will not fold. In reviewing the factory catalogue on the 1924 Flint, which I

Satisfied with my PRESENT PAYCHECK?

NOT ME!!

TODAY, you are probably earning enough to get by—enough to provide your family with life's necessities, and perhaps you are depositing a few extra dollars in the bank.

BUT are you content with just earning a living wage? Do you say "Someday I'll really get a break and go right on to the top." THAT'S WISHFUL THINKING!

You know that the "breaks" go to the man or woman who is *prepared* to take advantage of them—to the person who can fill the better job and who is worth more money. He makes the "breaks" instead of waiting for them.

DO YOU QUESTION YOUR OWN ABILITY?

There is a field of business which has never been overcrowded—it's the ACCOUNTING FIELD. And the demand for skilled accountants—men and women who really know their business—is increasing. State and Federal legislation requires much more efficient accounting from business. Corporations are in constant need of expert counsel in matters relating to Auditing, Cost Accounting, Business Law, and Federal Income Tax. Men who prove their qualifications in this important branch of business are promoted to responsible executive positions—given an opportunity to earn real salaries. The range is $5,000 to $10,000 a year—even to higher income figures.

WHY BE SATISFIED WITH YOUR PRESENT JOB?

Why accept mediocre pay when right in your own home you can acquire the necessary training to advance rapidly in the profitable, growing field of Accounting.

Under the LaSalle Problem Method you can acquire a thorough knowledge of Accounting, master its fundamental principles, become expert in the practical application of those principles—without losing an hour from work or a dollar of pay.

Your training will be under the supervision of organization and management specialists, Attorneys and Certified Public Accountants. Preliminary knowledge of bookkeeping is not necessary. We train you from the ground up—Basic Accounting right through specialized training in Office Management, Governmental, Industrial, Commercial, or Public Accounting and CPA.

SO RIGHT NOW—TODAY

If you are ambitious—if you are interested in a high-paying career—investigate the opportunities in this profitable field.

FREE SAMPLE LESSON

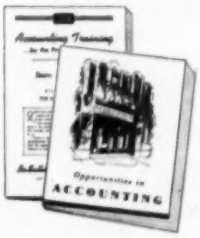
Decide today to send for LaSalle's Accounting Lesson Number One, also FREE book, "Opportunities in Accounting." In it you will find complete information on the opportunities which are open to those qualified, and you will learn how you can prepare yourself for a better job and more money. NO OBLIGATION. MAIL THE COUPON TODAY.

ACCREDITED MEMBER, NATIONAL HOME STUDY COUNCIL

MAIL THE COUPON TODAY!

OVER 4,500 CPAs HAVE BEEN TRAINED BY THE LA SALLE PROBLEM METHOD

SEND FOR FREE BOOKS



LaSalle Extension University

A Correspondence Institution

Dept. 1183H, 417 S. Dearborn St., Chicago 5, Ill.

Please send me, free of all cost or obligation, Free sample lesson, and your illustrated book, "Opportunities in Accounting."

Name ..... *Age* .....

Address .....

City, Zone, State .....

OWN a Nationally Advertised Business

World Wide

We'll show you how to earn $8,750 clear PROFIT the first year on just 2 jobs a day... personally train you, furnish all equipment.

- **NO SHOP NEEDED**
- **START IN SPARETIME IF NOW EMPLOYED**
- **YOU OFFER 3 SERVICES**

Even if employed, enjoy the prestige and financial independence of your OWN business. We offer a lifetime opportunity to reliable men. You will be trained in your town by a Duraclean dealer, who will reveal the Duraclean System and plans for building business. He helps you get quickly established. Just **2** average jobs a day earns **$8,750 NET profit the first year.** Employ others, MULTIPLY profits. Business grows from recommendations, repeat orders. Under our guidance you become an expert in the care of rugs and upholstery. Easy to learn. We furnish everything.

YOU CAN START FROM YOUR HOME

These are full-time dealerships, but you can start part-time from home. All work done with portable equipment in homes, offices, hotels, institutions. We work with you 12 months of the year, provide 25 regular services to help you build business: **National Advertising** in McCalls, House & Garden, dozen others. **Insurance. Complete Local Ad Kit. Publicity Program** gets free newspaper stories. **Monthly Magazine. Conventions.** Many others.

THREE ways to make money

A Duraclean Dealership qualifies you to offer 3 different services: **1. DURACLEAN:** Famous ABSORPTION process for cleaning rugs, carpets, upholstery. Recommended by leading stores and manufacturers. NO scrubbing, soaking, shrinking. Aerated foam safely removes dirt, grease. Dries so fast, customers use furnishings in few hours! **2. DURASHIELD:** Soil-retarding treatment that KEEPS furnishings clean MONTHS longer. So new you may be first in town to offer this type service. **3. DURAPROOF:** Protects against damage by moths, carpet beetles. Only such treatment backed by an International 6-year Warranty!

Send for FREE Booklet!

A moderate payment establishes your business—pay balance from sales. We furnish electric machines, complete sales material, enough supplies to return TOTAL investment. Our FREE booklet explains urgently needed services, large profit, easy terms, PROTECTED territory. Send coupon **today.**

DURACLEAN CO., 7-18N Duraclean Bldg., Deerfield, Ill.

"OWN a Business" Coupon

Duraclean Co., 7-18N Duraclean Bldg., Deerfield, Ill.

Please rush free booklet and letter giving full details of how I may OWN a growing, lifetime business.

Name .....

Address .....

City ..... State .....

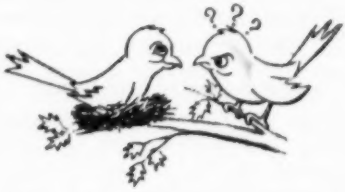
have, I notice that the manufacturer also states that the top is permanent.

DWIGHT L. BIDWELL, Madison, Tenn.

An irreverent artist converted it.

How to Watch a Bird

How on earth did you shoot that photo [Sept., p. 157] showing the radio-controlled camera leering at a bird on his



nest? If you used a second radio-controlled camera, did they both react to the same signal? And what did the bird think of all that equipment zeroed in on him?

JACK SULLIVAN, Cedar Rapids, Iowa

Hard to tell what the bird thought: He was stuffed, rented from a taxidermist as a photo model.

Poignant Reminders

THE timbers of the old house in which I live groaned and creaked at the thought that anyone could forget ["How Disaster Strikes," Sept.] the terrible twisting they took during one fateful day in 1906.

The San Francisco earthquake and fire of April 18-19, 1906, killed 452 persons and caused a loss of $350,000,000, a disaster which would qualify for your list.

S. L. SARTOR, San Francisco

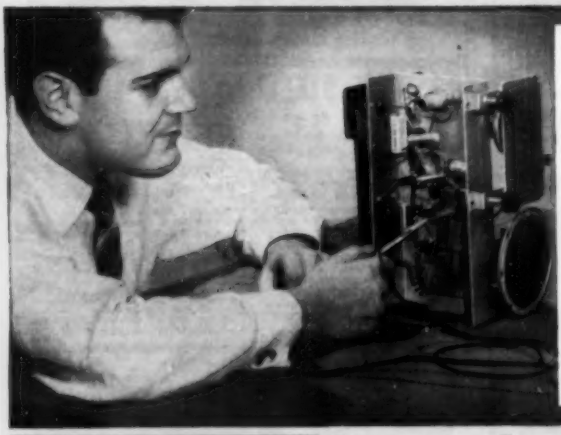
. . . You list the major United States disasters in the 20th century. The note below states "Does not include military action, ships *except when in U. S. ports,* aircraft," etc. Therefore, I take it that the list should include the loss of life on ships when in U. S. ports.

I wonder why you did not include the Eastland disaster, July, 1915, with the loss of 835 lives?

E. F. MCDONALD JR., Chicago

The Eastland overturned July 24th in the Chicago River. There is not even a feeble technicality to account for the omission of the San Francisco earthquake.

For a Successful Career in Radio-Television



Train at Home in Spare Time with N. R. I.

OLDEST and LARGEST

Home Study Radio-Television School

N.R.I. Trained These Men

ENGINEER STATION WHPE

"Thanks to NRI, I operated a successful Radio repair shop. Now I am an engineer for WHPE." VAN W. WORKMAN, HIGH POINT, NORTH CAROLINA

QUICK SPARE TIME CASH

"Knew nothing about Radio-TV when I enrolled. After 15 lessons started repairing sets. My future looks bright." DONALD B. ACKERMAN, MINNEAPOLIS, MINNESOTA

HAS OWN TV BUSINESS

"Quit my job to do Television work full time. I love it and do all right financially." WILLIAM F. KLINE, CINCINNATI, OHIO

Prosperous Fast Growing Industry Offers You GOOD PAY-BRIGHT FUTURE-SUCCESS

It's the trained man who gets ahead—gets the better job, drives a better car, lives in a better home, is respected for what he knows and can do. For a job with a future—find out how you can train at home for Radio-Television.

TODAY'S OPPORTUNITY FIELD

Training PLUS OPPORTUNITY is the ideal combination for success. And today's OPPORTUNITY field is Radio-Television. Over 125 million home Radios plus 30 million sets in cars, plus 40 million TV sets mean big money for trained Technicians. More than 4,000 Radio and TV broadcasting stations offer interesting and important positions. Color television, portable TV sets, Hi-Fi, assure future growth. Find out about NRI. Since 1914—for more than 40 years—NRI has been training ambitious men at home in spare time for Radio-TV. With NRI 50-50 method, you study basic principles AND learn by practicing with actual equipment NRI furnishes. You learn with your hands and your head. You get dependable training, backed up by the reputation of the oldest and largest home study Radio-TV school.

ADD TO YOUR INCOME SOON

$10-$15 A WEEK IN SPARE TIME

Soon after enrolling many start earning extra money fixing sets. Many open their own full time Radio-TV shops after getting NRI Diploma. MAIL COUPON. Get FREE Sample Lesson and 64-page Catalog showing equipment supplied, outlines of courses, opportunities in Radio-TV. Price is low—terms easy. Address: **NATIONAL RADIO INSTITUTE, Dept. 7MB, Washington , D. C.**

You Learn Servicing-Broadcasting at Home—By Practicing with Kits N.R.I. Sends

Nothing takes the place of practical experience. That's why NRI training is Learning-by-Doing. With Servicing Course you build Radio shown at top and other equipment. With Communications Course you build Transmitters at left and other equipment. Catalog shows all equipment you get.

Available To VETERANS Under G.I. Bills

SAMPLE LESSON AND CATALOG FREE

MAIL COUPON TODAY

National Radio Institute
Dept. 7MB, Washington 16, D. C.

Mail me Sample Lesson and 64-Page Catalog FREE. (No salesman will call. Please write plainly.)

Name_____Age____

Address_____

City_____Zone____State_____

ACCREDITED MEMBER, NATIONAL HOME STUDY COUNCIL

THORESEN'S MILLION

SAVE MORE! BUY DIRECT FROM FAMOUS IMPORTER!

Thoresen's policy of business in millions and profits in dimes guarantees you our lowest discount prices! You buy DIRECT! You never pay for needless distribution costs or middlemen's profits. And you risk NOT ONE CENT! If you're not satisfied after 10-day home trial, your money is refunded promptly! Mail coupon on facing page. All orders filled & shipped in 48 hours. Every item exactly as described—but stock limited on some. THORESEN, Inc., 585 Water St., New York 2, N. Y.

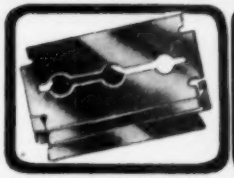
Famous Plastic STORM WINDOW

Regular 49c Size **19½c**

Protects Your Family All Winter for Pennies!

★ 2 Million Sold!
★ Install in Minutes!
★ Can't Crack or Rattle!

Why pay up to $14.00 each for glass storm windows when you can insulate with Trans-Kleer for pennies? Trans-Kleer is transparent like glass yet can't break, shatter, peel, chip or rattle. Weighs less than 1/10th of lightest glass window—yet laboratory tests prove its amazing tensile strength. Not affected by snow, sleet, rain, dampness—because it is NON-POROUS. Won't crack even at 53 degrees BELOW FREEZING! Easy to install. No hooks, no screws, no installation costs. Just press on! Even a youngster can do it. Merely cut & fit window; press with Adheso tape—that's all. FOR AIRING: Just lift. Then press back in place. When winter's over, fold away for next year. TWO MILLION ALREADY SOLD! Acclaimed by home owners, churches, schools, builders, etc. Trans-Kleer is shipped flat in rolls measuring 36" x 432"—108 sq. feet—enough for 10 windows. Regular price $4.95—now SLASHED DOWN TO $1.98—about 19½ cents per window. Direct to you! Add 22¢ to defray packing & handling costs. TOTAL: $2.20. FREE with order 90-foot roll ($1.00 size) of famous Adheso Masking Tape. Trans-Kleer sold only by mail only by Thoresen's. Beware of imitations. Get the BEST! NO. 74—108 sq. feet.....$2.20



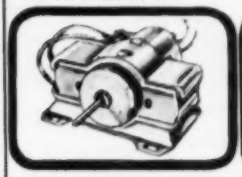
100 BLUE STEEL BLADES 1c EA.

Imagine—not 20 for 98c but 100 genuine BLUE surgical steel blades for only 99c—less than a cent each! New, first-quality—not a close-out! Guaranteed to give same close, keen shaves as brand costing 5 times the price—or money back. Men, why help pay for TV commercials when "everything's the same but the name . . . and the price?" Still not convinced? Send an order. Use 10 blades—full price refunded if not satisfied. Mail coupon on page 13. No. 131. 100 blades for 99c.

New 1958 ZEPHIR

One of World's Thinnest Watches

Back in stock! New shipment arrived from Switzerland. Our most fabulous "dress-watch" value. 14 Karat Gold color. Hands and numerals in 14 Karat Gold color too. Water-thin! Modern, elegant, distinctive. Guaranteed Swiss movement. Still only 7.98 plus 80c Fed. tax. TOTAL: $8.78 (No. 209) Deluxe model with 14 Karat Gold color EXPANSION BAND $2 more. Total, with Fed. tax, $10.98 (No. 209D)



Electric Motor Drives Model Planes, Trains.

Speeds to 5,600 RPM's.

Powerful, rugged, precision-built by master craftsmen. New. Fits palm of hand. Permanent magnetic field, bronze bushing, steel housing and mounting base. Drives model planes, trains, erector sets, small jig saws, wheels, etc. Use for lifting, or hoisting small objects. Keep in tool shop, garage, etc. Works on flashlight battery. Thousands sold—but why pay $2.98? Our price during mammoth Xmas sale—99c each. (Limit: 2 to customer). No. 103. **99c**

Every Man Wants This 10-in-1 SWISS Army Type Knife

SOLD AT $3.98 **1.98**

10 practical, quality tools in one: Saw, File, Knife, Can Opener, Screwdriver, Bottle Opener, Jackknife, Corkscrew, Awl, Scissors. Each separate. Easy to open, use and close. No jamming or slipping. Rugged Norium steel. Replaces multitude of tools & gadgets you can't find when needed. Keep in garage, tool shop, kitchen, basement, car glove compartment. 101 handy uses. 50 000 sold at $3.98—now HALF PRICE! Only $1.98. Stock up now! Excellent Christmas gifts for every sportsman on your list. No. 18

CUT PRICE! 150X POWER MICROSCOPE

MAGNIFIES 22,500 TIMES **4.98**

New! First-Quality! Powerful 150X microscope. Finely ground polished achromatic lenses. All metal construction. Precision-tooled threading... latest, most scientific design. Ideal for biologists, chemists, technicians, college students, etc. Keep in basement or tool shop. Cut price. $4.98. (Limit: one to customer). No. 23

DuPont Dacron Insulated Jacket

Thoresen scoops America and YOU SAVE $21.05! 100% DuPont Dacron Insulation—not one-ply, not two-ply—but 3-PLY insulation! Jacket weighs 30 ounces yet gives same protection as 20 lbs. of garment! No bulk. No excess weight. You move freely, crouch, bend. Jacket is extra-full cut. It's wind resistant, water repellent, mothproof, dustproof, non-allergic. It's 100% washable. Dries fast. Needs no ironing. Handsomely tailored poplin outer fabric. Full lined inside. Rustproof lifetime extra-heavy Talon Zipper—won't freeze! Two huge roomy side pockets—insulated for hand warming—with two big flaps with snap closures for extra protection. Storm collar has adjusting snap positions. Knitted cuffs for snug-tight protection. Self-adjusting elasticized nylon cord at hips stops cold from "creeping" in. Usually $49.95—but Thoresen cuts the price to only $28.88. You SAVE $21.07! And you get same guarantee as if you paid full purchase price. Wear it 10 days. Money back if not satisfied. Fireman red only. Sizes: Extra Small (32-34); Small (36-38); Medium (40-42); Large (44-46); Extra Large (48-50). Order by No. 59. Matching Hood—only $3.95 ($5.00 value). Order by No. 58

Made to Sell for $49.95!

28.88

DOLLAR XMAS SALE

Ladies Cocktail Watch Featured by 5th Ave. Jewelry Shops!

9.95 PLUS TAX

Masterpiece of high fashion. Natural gold color case, numerals and hands, 100% tarnish proof. Barely larger than a dime. Hand sculptured effect with 24 sparkling mock gems. Accurate anti-magnetic movement electronically timed by honored Swiss watchmakers. Gift boxed. Sale price: $9.95 plus 99c Federal tax. Total: $10.94. State color gems desired: Ruby-red, emerald-green, sapphire-blue. Suede strap in perfect matching color. NO. 207.

Foldaway Binoculars From W. Germany

Reg. 2.98 **1.69**

Clever! Unusual! Practical! Fits in pocket or purse flat. Snaps open, folds shut. 8 instruments in one. Binoculars, Magnetic Compass, Magnifying Mirror, Reading Glass, Telescope, Laryngoscope, Stereoscope and even Sun Dial Watch. Precision-import from Western Germany. Thousands sold at $2.98—now only $1.69 while supplies last. NO. 93 ..... $1.69

Rugged New 1958 Thoresen WATER & SHOCK RESISTANT WATCH

Compare with Models Ticketed at $49.95:

7.98 PLUS TAX

- Stainless steel back
- Anti-Magnetic
- Imported from Switzerland

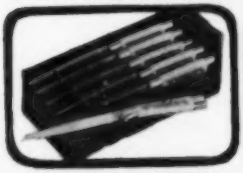
UNLIMITED GUARANTEE
exclusive of parts
Repairs on watch, if ever needed, absolutely FREE. Never a charge for labor, handling, adjusting, etc. for the LIFETIME of this firm! Guarantee given in WRITING!

We've sold over 200,000 watches in recent years but this is our most fabulous value! Handsome, rugged Thoresen 1958 Water & Shock Resistant watch—engineered to rigid Swiss precision standards—yours for only $7.98 p.us tax! Bang it! Jolt it! Wet it! The Genova is MULTI-PROTECTED. Resists shocks at work or play. Sealed-in safeguard gasket resists water, grime, dust. Yes! It actually runs under water!

*Compare the Genova with watches selling today up to $49.95 for its elegant, very thin design, its modern applique dial, its smart, distinctive looks, its truly durable construction. Don't let our low price confuse you. The Genova is precision-made by honored Swiss watchmakers famed for their high standards of craftsmanship! Even if we were to charge you TWICE the price, we couldn't give you a more accurate timepiece! Wear the Genova on hunting, fishing, camping trips; at home; at work; at play. It's built to take rugged use! It makes an excellent gift for any any man, any age!

And remember, even at this low price you receive the famous THORESEN guarantee of FREE service, FREE oiling, FREE adjusting, FREE labor. (See guarantee certificate above.) This guarantee is good not for one year, not for two years—but for the lifetime of this firm! We have a full-time jeweler and watch service department to cater to your needs.

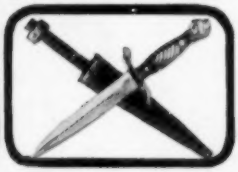
No. 260 Genova with leather strap, $7.98 plus 80c excise tax. TOTAL $8.78.
No. 260D Genova with metal expansion band $1.22 more. TOTAL: $10 taxpaid.



SOLINGEN STEAK KNIVES

without box **33c**

Formerly $2.00 each. As advertised in House Beautiful, The American Home, Esquire, etc. Solingen stainless steel steak knives. Serrated edges. Never need polishing or sharpening. New, first quality. Gold & ivory hue handles. Truly beautiful. One million already sold—now one low price! 10-year replacement certificate. Stock up now. New shipment from West Germany will cost more. 3 for 99c, 6 for $1.96, 12 for $3.96. Free Cake Server with 12 knives. NO. 89.



Black Forest HUNTING KNIFE

Form. $3.98 **99c**

Red-hot bargain! Formerly $3.98. This handsome replica only 99c plus 26c for scabbard. Total: 1.25. Nearly 10 inches long. Korium steel blade sharp enough to shave with. Beautiful sculptured-effect! A champion in the field or as wall decoration. Order several. NO. 76. ..... 1.25

NEW POWERHOUSE "77" from West Germany

2.98

***40 MILE VIEWS!**

New 1958 Powerhouse "77" arrives just in time for Christmas giving! Now better than ever. New modern design. New faster focus. Sharper, better, clearer views—day or night! Take to football games, hockey matches, the races, on hunting, camping trips. You would expect to pay at least $5.00 for these power binoculars—but Thoresen imports from West Germany by BOAT-LOADS! We pay less. You pay less. NO. 160 ..... 2.98
(limit: 2 to customer)

THORESEN, Inc., 585 Water St., N. Y. 2, Dept. 7-M

RUSH the items listed below on 10-day home trial. My money back if I am not satisfied.

NO.	QUANTITY	ARTICLE	PRICE

☐ Check, money order, cash enclosed. Send prepaid.
☐ Send C.O.D. plus postal fees (NO C.O.D.'s under $1.98).

Canadians: Address 439 King Street, West, Toronto 2B, Ontario

PRINT NAME .....

ADDRESS .....

CITY & ZONE ..... STATE .....

Prize Projects BY PS READERS

Whale of a Model. When Orlando Milani of Chicago started a ship model, he laid the keel for a big one. His 135-pound whaling ship is five feet long and has a 12½-inch beam. Single-ply oak veneer laid up an inch thick made the hull and 1,000 feet of cord went into the rigging. The wheel really moves the rudder, and the Maria's cargo-loading derrick, lifeboat launchers and two chain-hung anchors are working parts, too.

Old Weapon Updated. This crossbow is aimed through a peepsight and fired by trigger action like a rifle. It shoots harpoons as well as arrows, and Karl Traudt of Babylon, N. Y., has bagged sharks with it. He made the bow of reinforced plastic. A car's bumper jack supplies the 500-pound pull needed to twang the stainless-steel wire that strings it.

Little Chest Holds a Lot. John J. Williams of Albuquerque, N. M., built this moth-frustrating box small, but it does a big job. In a climate where hot days are often followed by chilly evenings, it keeps knitwear safe yet handy.

Boards of butt-jointed red cedar over a mahogany frame make a short chest—22 inches—but one that holds 18 sweaters.

Have *you* recently completed a workshop project of which you are particularly proud? Send a good photograph of your work, along with the negative and a brief description, to the Mechanics and Handicraft Editor, POPULAR SCIENCE, 353 Fourth Ave., New York 10, N. Y. We will pay $15 for each item that is accepted for publication.

DeVRY TECH SPECIALIZES IN PREPARING THE UNTRAINED MAN

At Home... TO BECOME AN ELECTRONICS TECHNICIAN

DeVRY TECH INSTALLS COMPLETE RADAR SYSTEM

DeVry Tech students use real commercial-type equipment in their training—the same type they will use on their jobs after graduation. Jack Dempsey, former heavyweight boxing champion, who is Director of Public Relations, inspects the antenna of DeVry Tech's Radar Unit, on the roof of its Chicago resident school.

TWO WELL-EQUIPPED TRAINING CENTERS

If you can come to Chicago or Toronto, you can train for many opportunities under the close guidance of friendly, experienced instructors. You use valuable commercial equipment for "on-the-job-type" training. Send coupon for details.

LIVE-WIRE Employment Service

DeVry Tech's Placement Department is in contact with some of the best-known employers in the Electronics field. The service is free to all graduates — and DeVry Tech's record in helping to place men has been outstanding.

DRAFT AGE?

DeVry Tech has valuable information for men of draft age; so if you are subject to military service, be sure to check the coupon.

"One of North America's Foremost Electronics Training Centers"

Accredited Member of National Home Study Council

DeVRY TECHNICAL INSTITUTE
CHICAGO 41, ILLINOIS
Formerly DeFOREST'S TRAINING, INC.

NO PREVIOUS TECHNICAL EXPERIENCE OR ADVANCED EDUCATION NEEDED

Your job of today and your experience of yesterday are not as important as your ambition for tomorrow! If you would like to prepare to become an Electronics Technician, in your spare time and without interfering with your present job, read these facts: Laborers and bookkeepers, store clerks, farmers, salesmen—men of nearly every calling—have taken the DeVry Tech program and today have good jobs or service shops of their own in some branch of Electronics. Here's proof that it can be done. If you are 17 to 55, we will tell you free how you may prepare for exciting, interesting jobs in Automation Electronics, Radar, Guided Missiles, Communications, Industrial Electronics, etc. Here is a chance of a lifetime to prepare to cash in on one of today's fastest growing fields. Mail the coupon for free facts! DeVry Tech's practical home method enables you to get the same type of basic training and equipment as used in our Chicago and Toronto training laboratories—among the finest! Send coupon NOW!

INDEX to a Better Job and a Brighter Future in These Newer Opportunity Fields

COMMUNICATIONS • RADAR • GUIDED MISSILES • RADIO
TELEVISION • MICRO-WAVES • INDUSTRIAL ELECTRONICS
COMPUTERS • AUTOMATION ELECTRONICS

MAIL COUPON FOR FREE BOOKLET!

DeVry Technical Institute
4141 Belmont Ave., Chicago 41, Ill., Dept. PS-11-N

Please give me your FREE booklet, "Electronics and YOU," and tell me how I may prepare to enter one or more branches of Electronics as listed above.

Name _____ Age _____
Please Print
Street _____ Apt. _____
City _____ Zone ____ State _____

☐ Check here if subject to military training.

DeVry Tech's Canadian Training Center is located at 626 Roselawn Avenue, Toronto 12, Ontario.

#2001

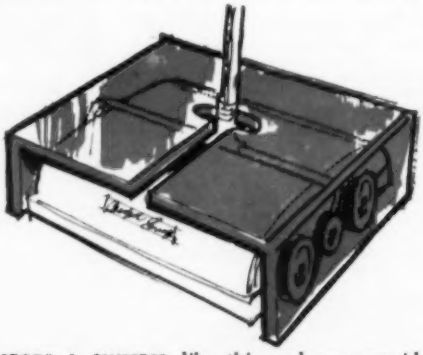
Keeping the Home Shipshape

STUBBORN CAPS, even those on syrup bottles, come off easily if expanded by heat treatment. Just hold the cap over a stove burner or under a hot-water faucet a few moments.

USE A THROUGH-THE-WALL-FITTING to run a TV antenna lead into the house if you have metal weatherstripping. Wires crossing the metal will impair both reception and the heat seal.

A TUBULAR CHAIR can be made taller in a hurry when a young visitor comes to dinner. Just remove the rubber or metal caps, and wedge tapered wood dowels into the hollow legs.

BREAKING OUT THE WINTER WOOLENS? You can salvage unevaporated moth cakes or crystals. Store them in an airtight jar or heat-seal them in a freezer bag for re-use next spring.



STORE A SWEEPER like this and you provide the closet with a step-stool, too. Stand on the rear of the box and push the sweeper handle into the cross slot for a balancing rod.

Train in Big Coyne Shops

GREAT OPPORTUNITY FIELDS!

Instructor helping students check the wiring and trace the circuits of television receivers.

This big fire-proof building is occupied entirely by Coyne.

Instructor explaining operation and testing of a large Motor Generator.

TELEVISION-RADIO

COLOR TV

Here at COYNE you're trained for Testing, Trouble-Shooting and Servicing on AM and FM Radio Units, Auto Radio, Television, etc. Thousands of **Coyne** trained men in good jobs or own well paying TV-Radio businesses.

ELECTRICITY

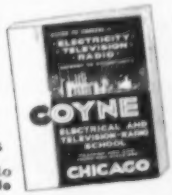
ELECTRONICS

Big opportunities everywhere—city, town and country, in Power Plant Work, Motors, Industrial Electronics, Armature Winding, Home and Factory Wiring, Appliances, Refrigeration, Maintenance, Illumination, etc.

OLDEST AND BEST EQUIPPED SCHOOL OF ITS KIND IN THE U.S.

Send Coupon Below for

BIG FREE BOOK



"Guide to Careers in ELECTRICITY-ELECTRONICS and TELEVISION-RADIO"

Book and details come to you by return mail. **No salesman will call.**

WE TRAIN YOU IN CHICAGO

Our famous Practical-Technical method gives you practical experience on a massive outlay of equipment plus necessary technical training right here in the great **Coyne** shops.

Training in Refrigeration and Electric Appliances can be included.

Training offered to VETERANS and NON-VETS alike

START NOW—PAY LATER

Enroll now, pay most of tuition later. Part time employment help for students. Lifetime employment service to Graduates. Frequent starting dates.

B. W. COOKE, JR., President **COYNE** ELECTRICAL SCHOOL FOUNDED 1899

A TECHNICAL TRADE INSTITUTE OPERATED NOT FOR PROFIT

500 S. PAULINA STREET, CHICAGO, Dept. 87-73H

ELECTRICITY ★ RADIO ★ TELEVISION ★ REFRIGERATION ★ ELECTRONICS

MAIL COUPON TODAY

COYNE ELECTRICAL SCHOOL
500 S. Paulina St., Chicago 12, Ill., Dept 87-73H

Send BIG FREE book and details of all the training you offer. This does not obligate me and no salesman will call. I am especially interested in:

☐ ELECTRICITY-Electronics ☐ TELEVISION-Radio-Color TV

Name.....

Address.....

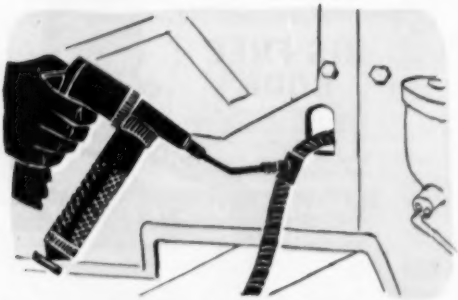
City.....State.....

"I'd like to see them make..."

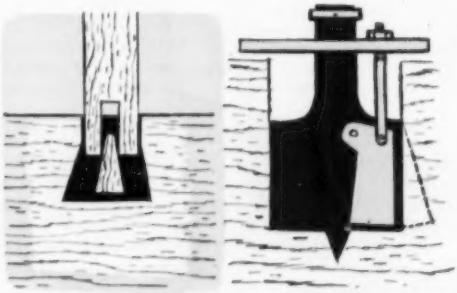
CLIP-ON FLASHLIGHTS FOR VACUUM CLEANERS, to light up attachments that cannot readily be wired from the cleaner. They'd help you see into dark corners.—*Dick Pray, Grossmont, Calif.*

POWDERED-COFFEE DISPENSERS like those drugstore headache-powder dispensers. They'd hold the upended bottle and measure out a spoonful at a time.—*D. Woodman, Meadowbrook, Pa.*

IMITATION COLONIAL WINDOWS to make washing and painting less of a chore. A snap-in framework would lift off each side of one big pane of glass.—*R. E. West, Rutherford, N. J.*



SPEEDOMETER CABLES WITH A GREASE FITTING near the firewall. Then if there was any noticeable noise from within, a grease gun could quickly silence it.—*John Schalk, Detroit.*



A DOWELING BIT for electric drills. An inset blade would work out gradually to widen the hole as a collar on the shank bears against wood.—*B. L. Honeycutt, Nashville, Tenn.*

Everyone has his own pet idea of a gadget that he would like to see in general use. The five ideas illustrated above were suggested by POPULAR SCIENCE readers. What's *yours?* We will pay $5 for each one published. Please use Government postcards only. Write name and address clearly. Contributions cannot be acknowledged or returned.

HELP YOURSELF to a BETTER JOB!

I'LL TRAIN YOU AT HOME TO BE A HIGHLY-PAID MECHANIC IN

AIR CONDITIONING

AND REFRIGERATION

R. C. ANDERSON
President
CTI

It has been one of America's great industries for years—but the way it's growing, you'd think it was in its infancy! That's why the air conditioning and refrigeration industry appeals so strongly to ambitious men who want better jobs, more security, higher pay.

Over 150 million refrigerating units are in use today—are in need of repair and service. Each year, 3 million refrigerators, 1 million freezers and 2 million air conditioners are produced. Not only homes, but stores, offices, restaurants, motels and transportation systems use some form of refrigeration. Even autos are being made with air conditioners. No wonder trained men are in big demand—are so well paid! Want to be a mechanic in this field? To find out how, *just mail coupon for valuable free information!*

AN AMAZING, *NEW* SHOP-METHOD TRAINING PLAN

After years of research, CTI has developed a wonderfully effective training plan. It enables you to train at home in spare time. *You get 23 big kits* to build an air conditioner, refrigerator, freezer or milk cooler. You keep all this equipment. *You do 10 service and trouble-shooting jobs.* CTI brings field training right into your home! You get practical experience as you learn.

YOU GET EXPERIENCE AS YOU TRAIN BECAUSE YOU PRACTICE WITH COMMERCIAL EQUIPMENT

You get all parts and tools to build a heavy-duty, commercial-type, ¼ h.p. refrigeration high-side (illustrated at right.) You receive lesson material which not only makes kit assembly *easy*, but downright *fascinating!* Remember, kit training in this field is a CTI "FIRST"

Above left is photo of special tools in just one kit. In another kit (right) you get motor, fan, pulley, service tools. You get other tools, tubing, much equipment, all of finest quality. Kits are sent on a planned schedule so that you learn in easy stages. Kit training develops skill, provides experience, speeds training.

HOW YOU MAY EARN CASH AS YOU TRAIN

Many students do repairing in their spare time soon after they enroll. A number get part-time jobs, others open shops. With their earnings many students not only pay their tuition, but sometimes have enough money remaining to put in the bank. The reason that students can do field work for profit is that CTI training is *practical*. Students get their experience as they *train*—not as low-paid apprentices! But get the complete story on your opportunities. *Fill out and mail coupon today.*

OPEN A SHOP—BE THE BOSS

The air conditioning and refrigeration industry is a good one in which to start out "on your own." Many CTI graduates have done it, and if you have the determination, you could do it, too! CTI has special information for men who want to go into business. *Mail coupon for details.*

COMMERCIAL TRADES INSTITUTE
1400 Greenleaf Avenue • Chicago 26, Illinois

MAIL TODAY FOR FREE BOOK AND SAMPLE LESSON

COMMERCIAL TRADES INSTITUTE
1400 GREENLEAF AVENUE DEPT R-421
CHICAGO 26, ILLINOIS

Tell me how I can qualify for a better job or a business of my own. Send booklet, *Success in Air Conditioning & Refrigeration*, and Lesson Sample. Both FREE.

Name_____ Age_____

Address_____

City_____ Zone____ State_____

SPECIAL TRADE-IN OFFER!

AVAILABLE AT YOUR LOCAL DEALER

NOW GET $1.00 TRADE-IN

ALLOWANCE FOR YOUR OLD TORCH*

toward a modern, convenient

BERNZ O MATIC®

TX-888 All-Purpose

TORCH KIT

KIT INCLUDES:

- Utility burner head
- Soldering tip
- Flame spreader
- Torch with pencil burner

Regular retail kit price	$8.88
LESS YOUR TRADE-IN	$1.00
NOW YOU PAY ONLY	$7.88

*ANY OLD TORCH—Gasoline, Butane, Kerosene, "Tin-Can" Type, Alcohol, Propane—regardless of age or condition.

Here is how you'll use your Bernz-O-Matic All-Purpose Torch Kit

PAINT REMOVING

All loose paint must be removed to prevent peeling later. The Bernz-O-Matic Torch with flame spreader attachment makes paint removing simple.

ASPHALT TILE LAYING

The Bernz-O-Matic Torch provides a handy method of heating which makes it easy to lay or repair asphalt tile in any room of your house.

PATCHING A GUTTER LEAK

With your Bernz-O-Matic Torch you can often repair gutter leaks, saving the cost of replacing.

SWEATING COPPER TUBING

Now you can install or repair copper tubing in your home. The Bernz-O-Matic Torch gives quick, convenient heat that makes this job easier than ever.

THAWING FROZEN PIPES

Be prepared to meet this common winter emergency. Portable, safe, and easy; your Bernz-O-Matic Torch will thaw frozen pipes in a jiffy.

LOOSENING NUTS and BOLTS

Corroded nuts and bolts loosen quickly with a few blasts from your Bernz-O-Matic Torch. Safe and easy for those "do-it-yourself" jobs around the garage.

HUNDREDS OF OTHER USES:

- Plumbing repairs
- Lighting charcoal fires
- Antiquing furniture
- Softening old putty
- Electrical work
- Glass working
- Metal handicrafts
- Pipe and jewelry soldering

Send for FREE Color Brochure describing all Bernz-O-Matic products

OTTO BERNZ CO., INC., ROCHESTER, N. Y.

ALABAMA

Birmingham ..... Wood's Do-It-Yourself Center
Brewton ..... Robbins & McGowin Co.
Mobile ..... Alabama Hardware Co.

ARIZONA

All Service and Quality Hardware Stores

ARKANSAS

Jonesboro ..... Henry Franklin Hardware

CALIFORNIA

All Lucky Auto Supply Stores
All Marshall Wells Stores
All Pep Boys Stores
All W. P. Fuller Co. Stores
Anaheim ..... Pressel, Rogers and Pressel Hdwe.
Bellflower ..... DeJong and Son Hdwe.
Burlingame ..... Broadway Hardware
Chula Vista ..... Peters Feed and Hdwe.
Compton ..... Imperial Hdwe. Co.
Glendale ..... Cornwell and Kelty Hdwe.
Inglewood ..... Van Times Hdwe.
Long Beach ..... Imperial Hdwe. Co.
National City ..... Highland Hdwe.
Norwalk ..... Coffman's Hdwe.
Oceanside ..... Oceanside Lumber & Hdwe.
Oxnard ..... Oxnard Hdwe.
Pasadena ..... Pasadena Hdwe. Co.
Palo Alto ..... Merner Lumber & Hdwe. Co.
..... Palo Alto Hardware Co.
Redwood City ..... Holmquist Hdwe. Co.
..... Imperial Hardware
Reseda ..... Whitmire Hdwe.
Riverside ..... J. R. Westbrook Co.
Sacramento ..... Emige Hardware Co.
Sacramento ..... Newberts Hardware
Sacramento ..... Shorrock's Hardware
Sacramento ..... Swart's Hdwe.
Sacramento ..... Walker Hardware
San Bernardino ..... Cooper Hdwe. Co.
San Bernardino ..... Stembridge Hdwe.
San Carlos ..... Columbia Hardware
San Carlos ..... Industrial Hardware
San Francisco ..... American Appliance and Supply Co.
San Francisco ..... Brentwood Hardware
San Francisco ..... Dimmer Hardware Co., Inc.
San Francisco ..... Hockings Hardware
San Francisco ..... E. M. Hundley
San Mateo ..... Bair's Hardware
San Pedro ..... San Pedro Hdwe.
Santa Ana ..... Clark Dye Hdwe.
Santa Barbara ..... Holiday Hdwe. Co.
Santa Monica ..... Busy Bee Hdwe. Co.
Sunnyvale ..... Plaza Hardware
Tujunga ..... Ray's Hdwe.
Van Nuys ..... Marshall Hdwe. Co.
Van Nuys ..... The Tool Mart Inc.
Ventura ..... Coast Hdwe.
Whittier ..... Gene's Hdwe.
Woodland Hills ..... Rudy's Hdwe. Co.

COLORADO

All Coast-to-Coast Stores
All Service and Quality Hardware Stores
Colorado Springs ..... Shearer Hdwe. Co.
Denver ..... Bilbrough-Jones Hdwe.
Denver ..... Ross Hdwe.
Pueblo ..... Randolph Hdwe.

CONNECTICUT

All Grossman Branches
Ansonia ..... M Gans Co.
Bridgeport ..... The City Lumber Co.
Bristol ..... Maple End Hdwe. Inc.
Danbury ..... Heyman Hdwe. Co.
Greenwich ..... Greenwich Hdwe.
Hartford ..... Capitol Hdwe. Co.
New Canaan ..... Silliman's Inc.
New Haven ..... C. S. Mersick and Co.
South Norwalk ..... F. G. DeWaters and Son
Westport ..... The Westport Hdwe. Store

DISTRICT OF COLUMBIA

Washington ..... W. R. Winslow Paint Co.

FLORIDA

Fort Myers ..... Fohl Hdwe.
Jacksonville ..... Miller Paint and Hdwe. Co.
Jacksonville ..... Southside Hdwe. Co.
Miami ..... Brady Mercantile Co.
Miami ..... Duvall Hdwe.
Miami ..... George Bros. Inc., Hdwe.
Miami ..... Pauls Hardware
St. Petersburg ..... George and Cliff's Hdwe.
Tampa ..... Tampa Hdwe. Co.

GEORGIA

Atlanta ..... Buckhead Hdwe.
Decatur ..... Smith Hdwe. Co.

IDAHO

All Marshall-Wells Stores
All Service and Quality Hardware Stores
Caldwell ..... Becker Hardware Co.

ILLINOIS

All Ace Hardware Stores
All Best Hardware Stores
All Coast-to-Coast Stores
All Service and Quality Stores
All Western Tire Auto Stores
Champaign ..... Gee Lumber Co.
Chicago ..... Gee Lumber Co.
Chicago ..... Goldblatt's
Chicago ..... Stebbins Hdwe. Co.
Danville ..... Black and Co.
Decatur ..... Black and Co.
Cuinee ..... Gurnee Hardware
Joliet ..... Barrett's Inc.
Lombard ..... Ratke Hardware & Supply
Marion ..... E. Blankenship and Co.
Peoria ..... Hobbymodels
Rockford ..... Black and Co.
Rockford ..... Nicholson Hdwe.
Springfield ..... Black and Co.

INDIANA

All Ace Hardware Stores
All Service and Quality Hardware Stores
All Western Tire Auto Stores
Evansville ..... Frank A. Heyden Hdwe.
Fort Wayne ..... Schlatter Hardware Co., Inc.
Indianapolis ..... Economy Plumbing Supply Co.
Marion ..... Marion Hardware Co.
Shelbyville ..... J. G. DePrez Co., Inc.

IOWA

All Coast-to-Coast Stores
All Ace Hardware Stores
All Service and Quality Hardware Stores
All Western Tire Auto Stores

KANSAS

All Service and Quality Hardware Stores
Topeka ..... Offen's Hardware
Topeka ..... Whelan Lumber Co.
Wichita ..... Kidwell Hardware
Wichita ..... Steel Lewis Hdwe. & Supply Co.

TRADE IN YOUR OLD TORCH NOW

at any of these

BERNZ-O-MATIC

Dealers

KENTUCKY

All Western Tire Auto Stores
Louisville ..... C. R. Chism Hdwe.
Louisville ..... Sam Kohn and Sons

LOUISIANA

Arabi ..... Delort Hdwe. Co.
Baton Rouge ..... Guerin Hardware Co., Inc.
Monroe ..... Royal Feed and Seed Store
New Orleans ..... Campo Hardware Co.
New Orleans ..... Claiborne Hdwe. & Paint Co.
New Orleans ..... Eddie's Hardware

MAINE

All Grossman's Branches
Houlton ..... Almon H. Fogg Co.
Lewiston ..... Bauer Hardware Co.
Portland ..... Edwards and Walker Co.
Portland ..... Maine Hardware and Plumbing Sup.

MARYLAND

Baltimore ..... A. Bauer and Co.
Baltimore ..... Hardware Fair (Baltimore Salvage Co.)
Baltimore ..... Lasting Paint Stores
Bethesda ..... Community Paint and Hdwe., Inc.
Bethesda ..... Strosnider's Hdwe.
Cambridge ..... The Phillips Hdwe. Co.
Chevy Chase ..... Chevy Chase Paint and Hdwe. Co.
Frederick ..... May's Hardware
Frostburg ..... Layman's Hdwe.
Kensington ..... McIntire Hdwe., Inc.
Silver Spring ..... Maloney's Inc.
Silver Spring ..... Murray Hdwe. Co.
Silver Spring ..... John R. Pendleton and Son
Silver Spring ..... Wheaton Paint and Hdwe. Co.
Towson ..... Stebbin-Anderson Co.
Wheaton ..... Wheaton Paint & Hdwe. Co.

MASSACHUSETTS

All W. E. Aubuchon Co., Inc., Hardware Stores
All Grossman's Branches
Boston ..... Jordan Marsh Company
Brookline ..... Atlas Paint and Supply Co.
Cambridge ..... Kaufman's Hardware
Framingham ..... Jordan Marsh Company
Lawrence ..... Essex Hardware & Plumbing Sup. Co.
Lawrence ..... Treat Hardware Co.
Malden ..... Malden Supply Co.
Malden ..... Jordan Marsh Company
Pittsfield ..... Carr Supply Co.
Springfield ..... Carlisle Hardware Co.
Waltham ..... Black Supply Co.

MICHIGAN

All Ace Hardware Stores
All Service and Quality Hardware Stores
All Western Tire Auto Stores
Adrian ..... Davis and Baily Hdwe.
Bay City ..... Gregoire and Dodick Co.
Cadillac ..... Johnson Hdwe.
Cloverdale ..... Lewis Electric
Detroit ..... Federal Pipe and Sup. Co.
Detroit ..... Eric Fromm Inc.
Detroit ..... T. B. Rayis
East Detroit ..... A. L. Damman Hdwe.
Flint ..... Geo. W. Hubbard Hdwe. Co.
Gaylord ..... Ford Hardware Co.
Grand Rapids ..... B. J's Store
Grand Rapids ..... Godwin Paint and Hdwe.
Hart ..... Bucinski Hdwe.
Jackson ..... Castle Hardware
Lansing ..... B. J's Store
Livonia ..... John's Livonia Hdwe.
Mt. Clemens ..... L. D'Hondt & Son Hdwe. & Plbg.
Oak Park ..... Trading Post Hdwe.
Port Huron ..... Beard Campbell Hdwe.
Port Huron ..... Mortimer and Son Lumber Co.
Royal Oak ..... Maskill Hdwe.
Saginaw ..... Morley Brothers
Saginaw ..... Yankee Stores, Inc.
Traverse City ..... B. J's Store

MINNESOTA

All Ace Hardware Stores
All Coast-to-Coast Stores
All Marshall-Wells Stores
All Service and Quality Hardware Stores
Duluth ..... Caugherty Hardware
Minneapolis ..... Jobid Hardware
Minneapolis ..... Warner Hardware Co.
Richfield ..... Warner Hardware Co.
St. Louis Park ..... Warner Hardware Co.
St. Anthony ..... Warner Hardware Co.
St. Paul ..... Raymer's
St. Paul ..... Warner Hardware Co.

MISSOURI

All Service and Quality Hardware Stores
Creve Coeur ..... Essen Hardware
Kansas City ..... Midland Hardware Co.
St. Louis ..... Broadway Hardware
St. Louis ..... Central Hardware Co.
St. Louis ..... Ellebrecht Hardware
St. Louis ..... Famous Barr Hardware Dept.
St. Louis ..... Hanneke Hdwe. & Paint Co.
St. Louis ..... Hess Hardware

MONTANA

All Service and Quality Hardware Stores
All Coast-to-Coast Stores

NEBRASKA

All Coast-to-Coast Stores
All Ace Hardware Stores
All Service and Quality Hardware Stores

NEVADA

All Marshall Wells Stores

NEW HAMPSHIRE

All W. E. Aubuchon Co. Inc. Hardware Stores
All Grossman's Branches
Manchester ..... J. J. Moreau and Son

NEW JERSEY

Bayonne ..... Chas. S. Goldberg & Sons
Camden ..... Henry Supply Co.
Denville ..... Anchor Supply Co.
East Brunswick ..... Franklin Hardware Inc.
Elizabeth ..... Samuel Yospin and Sons, Inc.
Englewood ..... Paint and Glass Co., Inc.
Hoboken ..... City Paint and Hdwe. Co.
Jersey City ..... Duncan Hardware, Inc.
Jersey City ..... The Max Eiser Hardware Co.
Jersey City ..... Paul Bros.
Jersey City ..... H. Reyman
Jersey City ..... N. Singerstein Inc.
Keyport ..... Keyport Hardware Co.
Keyport ..... Maple Hardware
Linden ..... Wood Ave. Hardware
Newark ..... Davidson's Mart
Newark ..... Foster Hardware & Sup.
Newark ..... New York Hardware Co.
Newark ..... Penn Hardware
Paramus ..... Davidson's Mart
Paramus ..... Tool Town
Parsippany ..... Parsippany Building Sup. Co.

Passaic ..... Park Paint & Wallpaper sup.
Paterson ..... United Hardware Inc.
Perth Amboy ..... Milton J. Guttman
Raritan ..... Raritan Valley Hdwe.
Rockaway ..... Rockaway Sales Co.

NEW MEXICO

All Service and Quality Hardware Stores
Albuquerque ..... Blucher Lumber Co.
Albuquerque ..... Eddy's Hdwe.

NEW YORK

Albany ..... Albright Hdwe. Stores Inc.
Albany ..... Bamer McDowell Inc.
Albany ..... Phillips Hdwe.
Albany ..... Terminal Hdwe., Inc.
Batavia ..... Salway's Hdwe.
Brockport ..... W. E. B. Stull Inc.
Bronx ..... Kass Hdw. & Sup. Co.
Bronx ..... Jay-Dee Specialty Co.
Brooklyn ..... Borough Park Hdwe. Co.
Brooklyn ..... H. P. Brown Super Hdwe.
Brooklyn ..... M. Chain Inc.
Brooklyn ..... Coleman Bros.
Brooklyn ..... Greschler's Hardware
Brooklyn ..... Hansen and Hasse Inc.
Brooklyn ..... Levitt Bros.
Brooklyn ..... Midwood Hdwe. Co.
Brooklyn ..... Monarch Hdwe. Inc.
Brooklyn ..... Pacific Hardware and Supply Co.
Brooklyn ..... J. & C Pratz Inc.
Brooklyn ..... Sam's Hardware
Brooklyn ..... Fred Stilers Hdwe.
Brooklyn ..... Waxman's Hdwe.
Buffalo ..... Weed and Co.
Buffalo ..... Wurster's Hardware
Farmingdale ..... Buy Rite Hardware
Jamaica ..... J. Weiner Hardware
Latham ..... Smith Electric Co., Inc.
Laurelton ..... L. Zickerman's Hdwe.
Astoria, Long Island ..... H. M. Bartunek
Long Island ..... Empire Hdwe. & Paint Sup.
Glendale, Long Island ..... Otto Herrmann Inc.
Smithtown, Long Island
..... David Brown Industrial Dept.
Long Island City
..... Van Alst Hdwe. & Sup. Co.
Lynbrook ..... Lynbrook Hdwe. Co. Inc.
Mt. Vernon ..... County Hdwe. Corp.
New Rochelle ..... Charles Libretti Hdwe. Co.
New York ..... D & R Auslander Co.
New York ..... Booky Hdwe. Corp.
New York ..... B. Dutchin Inc.
New York ..... H. Feldman Hdwe. & Glass Co.
New York ..... Inwood Maintenance Sup. Co.
New York ..... Rambro Hdwe.
New York ..... Kove Bros.
New York ..... Murray Hill Hdwe. Co., Inc.
New York ..... Patterson Bros. Hdwe. Co.
New York ..... Pioneer Hdwe. Corp.
New York ..... Richter Hdwe. Co.
New York ..... Max Shur Hdwe. Inc.
New York ..... W. H. Silver's Hdwe.
North Tarrytown ..... Ross Paint and Hdwe. Co.
North Troy ..... A. B. Manupella
Oriskany ..... State Hdwe. Co.
Port Chester ..... Littehouse Builders Sup. Co.
Rochester ..... Alhart's Electric
Rochester ..... Beuckman's Hdwe.
Rochester ..... Clark's Hdwe.
Rochester ..... Country Gentleman Inc.
Rochester ..... Ben Miller Hdwe.
Rochester ..... Muxworth Hdwe.
Rochester ..... Mort Weinberger Self Hdwe.
Rochester ..... Weed and Co.
Rockville Center ..... James and Hawkins Inc.
Schenectady ..... Bellevue Hdwe. & Elec.
Schenectady ..... Capital Paint Stores
Schenectady ..... The Plane Boys
Tuckahoe ..... Cornell Bros. Hdwe. Co.
Valley Stream
..... Valley Stream Pt. & Hdwe. Corp.
Yonkers ..... Rossner's
Yonkers ..... Joseph C. Ryan and Sons, Inc.
White Plains ..... Burke-McCowen Hdwe. Co.

NORTH DAKOTA

All Ace Hardware Stores
All Coast-to-Coast Stores
All Marshall-Wells Stores
All Service and Quality Hardware Stores
Jamestown ..... Scheels Hardware

OHIO

All Ace Hardware Stores
Akron ..... James Hardware
Bay Village ..... James Hardware
Chagrin Falls ..... Valley Hardware
Cincinnati
..... Auldemkampe Hardware Company
Cincinnati ..... Dettmer Hardware Co.
Cincinnati ..... Hader Hdwe. & Appliance Co.
Cincinnati ..... Pickering Hdwe. Co.
Cincinnati
..... Shillito Home Improvement Center
Cleveland ..... Broadview Sprague Hdwe.
Cleveland ..... Coleman Fairview Hdwe.
Cleveland ..... Dessill Tool and Supply Co.
Cleveland ..... Sam Finesilver Hdwe.
Cleveland ..... F. S. Ingersoll Hdwe.
Cleveland ..... Koller Bros. Co.
Cleveland ..... Lorain Heights Hdwe.
Cleveland ..... North Royalton Hdwe. Co.
Cleveland
..... Oakwood Community Home and Sup.
Cleveland ..... Odziemiski Hdwe. Co.
Cleveland ..... Parma Hdwe. Co.
Cleveland ..... Vinys Hdwe.
Cleveland ..... H. M. Wyatt Hdwe. Co.
Columbus ..... Acker's Hdwe.
Columbus ..... Cohagen Hdwe.
Columbus ..... Heil and Scheiderer
Columbus
..... Lazarus Department Store Hdwe. Dept.
Columbus ..... Linden Hardware Co.
Dayton ..... Miami Hdwe. & Appliance Co.
Dayton
..... Rike-Kumler Dept Store Hdwe. Dept.
Dayton ..... Seitz Hdwe. Co.
Hamilton ..... Hamilton Hdwe. Co.
Lorain ..... R. B. Company
London ..... Dwyer Bros. Inc.
Mansfield ..... The Martin Hdwe. Co.
Middletown ..... Dohn Hardware & Paint Co.
Norwood ..... Carlson's Hdwe & Appliances
Painesville ..... Lake County Hdwe. Co.
Parma ..... Parmatown Hdwe.
Sharonville ..... Cliff Hdwe. & Paint Sup. Inc.
Springfield ..... Koehler Super Hardware
Toledo ..... David Marieau Co.
Toledo ..... Schwartz Hdwe. & Sup. Co.
West Carrollton ..... Throckmorton's Inc.
Warren ..... Reese Hdwe. & Sup.
Wooster ..... James Hdwe.
Youngstown ..... Stambaugh-Thompson Co.

OKLAHOMA

Tulsa ..... Hanna Lumber Co.
Oklahoma City ..... Boltons Inc.

OREGON

Eugene ..... Warren Hardware Co.
Grants Pass ..... Rogue River Hardware
Medford ..... Hubbard Bros Hardware
Medford ..... Littrell Parts

TRADE IN YOUR OLD TORCH NOW

at any of these

BERNZ-O-MATIC

Dealers

See Advt. Pg. 20

Portland ..... Blessing Hardware Co.
Portland ..... Reed's Town Mart Hardware
Portland ..... Wink's Hdwe.
Portland ..... Meier and Frank Co.
Redmond ..... Baker and Jarrard
Salem ..... Allen Hardware

PENNSYLVANIA

Allentown ..... Allen Hdwe. Inc.
Ambler ..... G. M. Deck and Sons
Bala-Cynwyd ..... Main Line Hdwe. Co.
Bellevue ..... McKnight Hdwe.
Chester ..... Baylin Hdwe. Co., Inc.
Clairton ..... Plotkin Bros.
Darby ..... P. H. Sipler Co.
Doylestown ..... James D. Barrett
Drexel Hill ..... Pilgrim Hdwe. Co.
Fernwood ..... Master Hdwe. Store
Horsham ..... Horsham Hdwe.
Huntingdon ..... C. H. Miller Hdwe. Co.
Johnstown ..... Swank Hdwe. Co.
Lewisburg ..... C. Dreisbach's Sons Inc.
Lock Haven ..... Dickey-Grugan Hdwe.
Millersburg ..... Millersburg Hdwe.
Narberth ..... Ricklin's
New Kensington
..... H. A. Klingensmith and Sons
Norristown ..... Eskin Hdwe. Co.
Philadelphia ..... Eskin Hdwe. Co.
Philadelphia ..... Jacobs Bros.
Philadelphia ..... Kane and Brown
Philadelphia ..... Siwek Plbg. & Mill Supplies
Philadelphia ..... Frank Yaskin's Sons
Pittsburgh ..... Bartley Hardware Co.
Pittsburgh ..... Case Plumbing and Heating Co.
Pittsburgh ..... Fort Pitt Hdwe. Co.
Pittsburgh ..... Keystone Plbg. Sales Co.
Pittsburgh ..... McKnight Hdwe.
Pittsburgh ..... Meyers Plumbing & Htg. Sup.
Pottstown ..... General Supply
Reading ..... Leinbach Hdwe.
Reading ..... Winter Hdwe.
Wayne ..... Wayne Hdwe.
West Chester ..... M. S. Yearsley and Sons
Wilkes-Barre ..... Mak Bros. Hdwe.
Wilkinsburg Harmon Hdwe. & Appliance Co.
Willow Grove ..... Eskin Hdwe. Co.
York ..... York Paint & Hardware Co.

RHODE ISLAND

All Grossman's Branches
Cranston ..... C. L. Durfee
Providence ..... Harris Lumber Co., Inc.
West Warwick ..... Majestic Hdwe. Co.

SOUTH DAKOTA

All Ace Hardware Stores
All Coast-to-Coast Stores
All Marshall-Wells Stores
All Service and Quality Hardware Stores
Huron ..... Mahowald Hardware
Sioux Falls Jons Hardware & Sporting Goods
Watertown ..... Mahowald Hardware

TENNESSEE

Jackson ..... John E. Parker Co.
Memphis ..... Best Hdwe. & Appliance Co.
Memphis ..... Clark and Fay Inc.
Memphis ..... General Hdwe. & Sup. Co.
Memphis ..... Whitten Bros. Hdwe. Co.

TEXAS

All Service and Quality Hardware Stores
Canyon ..... Thompson Hardware Co.
Corpus Christi ..... Six Points Hdwe.
Dallas ..... C & S Hardware
Dallas ..... Sharp Hardware
El Paso ..... Douglas Bros. Hdwe. Co.
Fort Worth ..... Leonard's
Fort Worth ..... Westcliff Hardware Co.
Houston ..... Golfcrest Hdwe.
Houston ..... The Hardware Store
Houston ..... Wagner Hardware, Inc.
Midland ..... Basin Supply Co.
Port Arthur ..... Tweedel Bros. Inc.
San Antonio ..... E. J. Bilhartz Hdwe.
Temple ..... Temple Hardware
Waco ..... Barrett Hdwe.

UTAH

All Service and Quality Hardware Stores
Provo ..... Consolidated Corp.
Richfield ..... Christensen Hdwe.
Salt Lake City ..... Ketchum Bldrs. Sup. Co.
Salt Lake City ..... Pehrson Hdwe. & Appl.

VERMONT

All W. E. Aubuchon Co. Hardware Stores
All Grossman's Branches

VIRGINIA

Alexandria ..... Gaines Bros. Inc.
Arlington ..... Cherrydale Hardware
Norfolk ..... Geo. Hughes Hdwe.
Norfolk ..... Lum's Hdwe. Corp.
Petersburg ..... Pittsburgh Plate Glass Co.
Portsmouth ..... Pittsburgh Plate Glass Co.
Richmond ..... A. L. Lorraine Hdwe. Co.

WASHINGTON

All Coast-to-Coast Stores
All Marshall Wells Stores
Centralia ..... Gillingham and Jones
Chehalis The Two Yardbirds Shopping Center
Longview ..... Schneider Bros. Hdwe. Co.
Seattle ..... Braman Lumber and Hdwe. Co.
Seattle ..... Ernst Hdwe. Co.
Seattle ..... Mid City Lumber and Hardware
Spokane ..... Bon Marche

WEST VIRGINIA

Charleston ..... Village Hardware
Wheeling-Steubenville Metropolitan Area
..... Scott Lumber

WISCONSIN

All Ace Hardware Stores
All Coast-to-Coast Stores
All Service and Quality Hardware Stores
All Western Tire Auto Stores
Appleton ..... Schlafer Hdwe.
Kaukauna ..... Peter Feller Hdwe.
Madison ..... Wolff Kubly Hirsig
Milwaukee ..... National Supply and Hardware
Racine ..... Lathrop Hdwe
Racine ..... Mohr-Jones Hdwe. Co.

WYOMING

All Marshall Wells Stores
All Ace Hardware Stores
All Service and Quality Hardware Stores
Casper ..... Casper Lumber, Inc.

You ought to know...

Does it pay to shell out tolls for the turnpike? Or will you save money at little cost in time if you shun the pike and ride the free highways alongside it? The answer, from one test:

The toll road saves a lot of time and some money.

Two American Motors test drivers made New York-Chicago round trips in identical Ramblers, one on the pikes (New Jersey, Pennsylvania and Ohio Turnpikes and Northern Indiana Toll Road), one on U.S. Routes 22 and 30. The chart shows how they fared.

TEST SHOWS TURNPIKE SAVINGS

Chicago-New York Round Trip	Turnpikes	Free Highways
Driving Time	30 hrs. 15 min.	40 hrs. 49 min.
Average Speed	55 m.p.h.	41 m.p.h.
Gasoline Mileage	30.14 m.p.g.	29.62 m.p.g.
Gear Shifts	82	916
Brake Applications	36	772
Traffic Stops	25	266

Besides the whopping time gain—**five hours knocked off a 20-hour trip**—the pike saved some gas and much wear and tear on the car.

Brakes and transmissions benefited most. **Using the turnpikes, you should cut brake wear to 1/20, transmission wear to 1/10 of that encountered on the free roads.**

Small-car talk is still hot in Detroit. One report: GM may import for U.S. sale still another of its foreign economy vehicles. It's the Holden, designed in Detroit but now made in Australia.

The story is this: Right after World War II, Detroit wasn't sure whether American drivers wanted plain-jane transportation or jet-speed boudoirs. **Both Ford and GM worked up austerity cars and hand-built prototypes.** But extravagant cars won the day. The Ford still molders in a dark corner.

GM—never one to waste even the pig's squeal—shipped its prototype to Australia, and ordered production there. The Aussie reaction: smashing.

Queried about the Holden rumor, GM told POPULAR SCIENCE: "Not true. We're two years behind on orders in Australia."

But this may mean only inadequate production—a lack that GM is expert at fixing. **If the Opel and Vauxhall (reported on in October PS) do well this year, look for the Holden to join them in GM showrooms.**

Adding fuel to the small-car blaze is the hard fact of 1958 economics. A new car will squeeze your wallet three ways (you

You ought to know...

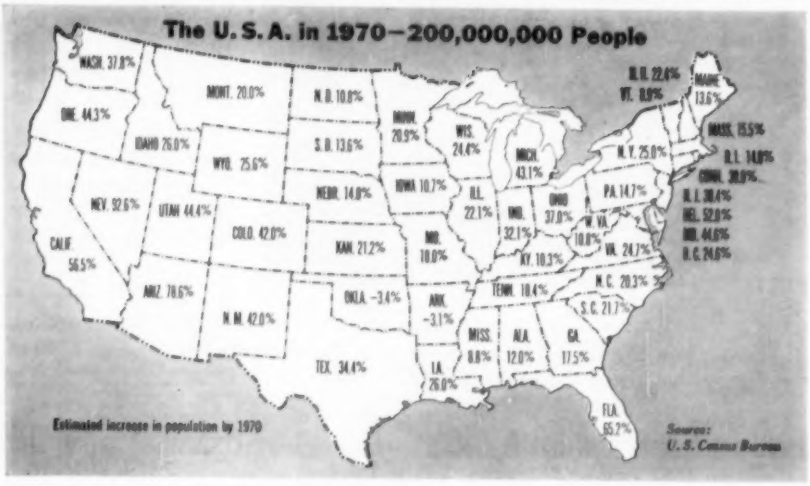
can blame inflation and the Government's moves against it):

1. **Factory prices are higher,** the increases averaging $100.
2. **Your dealer will pay more interest** on the money he borrows.
3. **You'll pay more for financing** (tight money again).

All these things add up. **You may be stuck for a total of $150 or more** over what a comparable '57 model would have cost.

The population pattern is the tip-off on schools, roads, hospitals. Are we over the hump? Or will we need more and more, year after year? The answer depends on where you live.

By 1970, the Census Bureau figures, **there'll be 30,000,000 more people in the U.S.** But the growth will be uneven—Nevada,



for example, may double its population (chart gives estimated percentage increases in population, 1970 over 1955).

If you live in a state that is growing fast, brace yourself for rising taxes. There will be a lot more children, a lot more automobiles. Brand-new schools and roads will be overcrowded.

If you live where population is growing slowly or not at all, expect pressure for schools and roads to ease up. **But a new need will face you: facilities, programs for older people.**

Why? The proportion of oldsters jumps sharply as population growth slows. And people live longer nowadays.

The Russian satellite sleeper wasn't such a surprise to regular readers of "You Ought to Know." Last August this column said: "U.S. scientists are much more sensitive about Russian competition than they like to admit. And they're worried lest the Reds score an honest first in the big satellite race." Exactly.

Title registered, contents copyrighted

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

72-L DISTRICT NATIONAL BUILDING
WASHINGTON 5, D. C.

Learn at Home

in your spare time

to Fix Electric Appliances

Better Pay—More Opportunities

Get into a field where there is important work and opportunity for the trained man. Millions of electric appliances are sold every year. Every wired home now has an average of 8. Many of them need service and repair. Owners pay well to have them fixed quickly, properly. This is your opportunity for a better job, your own part time or full time business. NRI can give you the training you need, at home, in your spare time.

Spare Time Earnings Start Soon

Soon after starting you will be able to earn extra cash fixing toasters, clocks, fans, vacuum cleaners, etc., for neighbors and friends. Keep your job while learning and earning. Put spare time to work for you. Work in your basement, garage, spare room. You'll be amazed how easily, quickly you, too, can start earning many extra dollars. NRI shows you how. Even before you finish training your spare time earnings may pay for the course and equipment.

NRI Sends Tester to Learn and Earn

You need proper equipment to service today's automatic appliances. With **this** course you get parts to build professional type, multi-use Appliance Tester. You learn to use it. Takes guess work out of servicing. Mail coupon for FREE book and Sample Lesson. See how easy it is to learn. Find out about NRI—a school that for more than 40 years has been training men, through home study, for success, good pay jobs. Our reputation, record, experience back up this course. Write now to: National Radio Institute, Dept. BM7, Washington 16, D. C.

FREE *Lesson and Book Mail this NOW!*

NATIONAL RADIO INSTITUTE
Dept. BM7, Washington 16, D. C.
Send me Lesson and Book Free. No Salesman will call.

Name ..... Age .....

Address .....

City ..... Zone ..... State .....

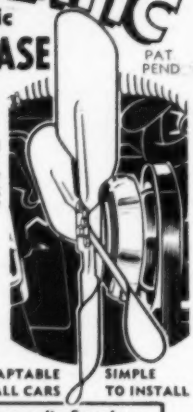
ACCREDITED MEMBER NATIONAL HOME STUDY COUNCIL

Boost Your Power!

FAN-O-MATIC

Automatic FAN RELEASE

PAT PEND



Automatically disengages fan at speeds over 40 mph!

At speeds over 35 MPH, standard automobile fans waste horsepower! The FAN-O-MATIC now makes your fan a free-wheeling unit, releasing wasted horsepower at speeds over 40 MPH.

- **Increases Available Horsepower . . . up to 15 HP**
- **Increases Gas Mileage . . . up to 2 mpg.**
- **Increases Acceleration . . . up to 10%**
- **Reduces Engine Noise**
- **Reduces Vibration**

ADAPTABLE TO ALL CARS — SIMPLE TO INSTALL

Tested and proved on Indianapolis Speedway under supervision of U. S. Auto Club.

2150

QUALITY SOLDER SEAL PRODUCTS

At your Garage, Ser. Sta. or Car Dealer!
If your dealer does not yet have it, ask him to write us for Jobber who can supply him.

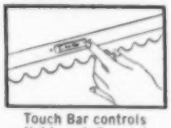
RADIATOR SPECIALTY CO.
CHARLOTTE, NORTH CAROLINA

Have this *TRADE-WIND* Ventilating Hood...

built into your present kitchen

Powerful ventilator is hidden in cabinet.

Eliminates heat, odors, grease . . adds lasting beauty. It's easy to install a Trade-Wind Ventilator in the cabinet over your stove. Choice of 3 hoods in copper and stainless steel, pre-wired with switch and light, ready to install in your kitchen. Also 6 top performance ventilators for kitchen, bath, laundry, workroom. Complete instructions with each unit.



Touch Bar controls light and 3-speed ventilator.

MAIL COUPON TODAY

Trade-Wind Motorfans, Inc.
7755 Paramount Blvd., Dept. 7755-PS
Rivera, Calif.

Please send information on Trade-Wind Ventilators.

Guaranteed by Good Housekeeping

NAME _____

ADDRESS _____

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS · COPYRIGHTS · PATENTS

142-E VICTOR BUILDING, WASHINGTON 1, D. C.

Over 100,000 top pay jobs are open for

Auto Mechanics

Now it's easy to train quickly at home

A national magazine reports, "100,000 mechanics are needed by the motor industry. If you qualify, you can go straight to the top." The vice-president of one of the "big three" says, "Technicians not only have excellent security but can count on good pay and promotion." *Don't let lack of training keep YOU from becoming a success!* Learn to become a mechanic at home in spare time. Find out *how* by filling out and mailing coupon below. No cost or obligation.

Get Experience Using Tune-Up Kit & Tools

(included with training)

CTI sends you a Tune-Up Kit, the kind that skilled mechanics use to locate engine troubles. You receive a compression Tester; Vacuum Gauge & Fuel Pump Tester; Ignition Timing Light; portable steel case. You also get mechanic's tools, including socket set. You acquire *experience* using kits.

DIESEL MECHANICS OR BODY-FENDER REBUILDING

is yours at no extra cost. Only CTI offers this *extra* choice. You get fully-rounded training in *all three* fields.

Many Students Earn Money as They Train

Many students earn extra money fixing cars. Some work "on their own," others take part-time jobs in local shops. They add to their experience—often make enough money to pay tuition and buy equipment. A large number have gone in business, made good. Mail coupon for full information—Commercial Trades Institute, Chicago 26, Ill.

MAIL TODAY FOR 2 FREE BOOKS

COMMERCIAL TRADES INSTITUTE
1400 GREENLEAF AVENUE
CHICAGO 26, ILL. DEPT. A-674

Send booklet, "Big Money in Auto Mechanics," and Sample Lesson. Both FREE.

Name_____ Age____

Address_____

City_____ Zone____ State_____

"I'M MAKING MORE THAN $1000 a Month

C. KAMA

Haven't Touched Bottom Yet!"

—reports Charles Kama, Texas, one of many who are "cleaning up" with orders for PRESTO. Science's New Midget Miracle Fire Extinguisher. So can YOU!

Amazing new kind of fire extinguisher. Tiny "Presto" does job of bulky extinguishers that cost 4 times as much, are 8 times as heavy. Ends fires fast as 2 seconds. Never corrodes.

Guaranteed for 20 years! Over 2 million sold! Sells for only $4.95.

Show it to civil defense workers, owners of homes, cars, boats, farms, etc., and to stores for resale—make good income. H. J. Kerr reports $20 a day. Wm. Wydallis $15.20 an hour. FREE Sales Kit. No obligation.

MERLITE INDUSTRIES, Dept. P-16C
PRESTO DIV., 114 E. 32 St., New York 16, N.Y.
Canada: Mopo Co., Ltd., 371 Dowd St., Montreal 1, P.Q.

MANUFACTURER'S CLOSEOUT GOLDE SLIDE PROJECTORS

ONLY $19.95
prepaid
(for complete kit)

IDEAL CHRISTMAS GIFT!

Selling entire stock of brand-new direct-from-factory Golde Coronet 2 x 2-slide projectors. Blower cooled, 300 watt lamp, 4" f3.5 anastigmat 2 element ground lens. Polished condensers. Heavy-duty cast aluminum housing (no pressed metal). Finger-tip focusing and tilt adjustment. Originally designed to sell for over twice as much. Our price direct to you for complete kit which can be easily assembled with screwdriver, only $19.95 prepaid. Factory-assembled, ready-to-operate unit, only $23.95 prepaid.

Send check or money order (no stamps). Money-back guarantee if not completely satisfied.

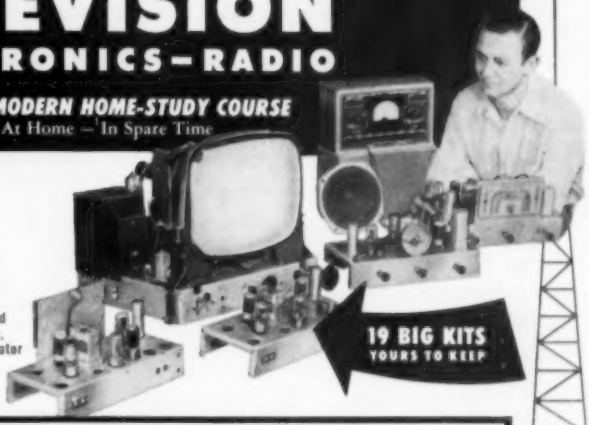
GOLDEN SALES COMPANY
P. O. Box 529
Brooklyn 1, New York

GREATEST ADVANCE IN SHOP-METHOD HOME TRAINING

EARN MORE MONEY... GET INTO TELEVISION ELECTRONICS—RADIO

Learn ALL 8 PHASES in ONE MODERN HOME-STUDY COURSE

At Home — In Spare Time



YOU GET ALL THIS NEWEST PRACTICAL EQUIPMENT

- Parts to build a modern TV set, including all tubes plus a large screen Picture Tube
- Parts to build a powerful Superhet Receiver, standard broadcast and short wave
- Parts to conduct many experiments and build Continuity Checker, RF Oscillator, TV Circuits, Audio Oscillator, TRF Receiver, Signal Generator
- A Valuable Professional Multitester

YOUR NATIONAL SCHOOLS TELERAMA COURSE COVERS ALL 8 PHASES

1. TELEVISION, INCLUDING COLOR TV
2. RADIO, FM AND AM
3. INDUSTRIAL ELECTRONICS
4. SOUND RECORDING AND HI FIDELITY
5. PREPARATION FOR FCC LICENSE
6. AUTOMATION
7. RADAR AND MICRO WAVES
8. COMMUNICATIONS

YOU ARE NEEDED IN THE TELEVISION-ELECTRONICS-RADIO INDUSTRY! You can build a secure future for yourself if you get into Electronics NOW! Today's shortage of trained technicians creates tremendous opportunities. National Schools Shop-Method trained technicians are in constant and growing demand for high-pay jobs in Broadcasting and Communications, Electronic Research, Servicing and Repair, and many other branches.

Let National Schools, a Resident Technical School for over 50 years train you for today's unlimited opportunities in electronics! Our Shop Method trains you to be a MASTER-TECHNICIAN. Completely up to date, developed by experienced instructors and engineers, your Telerama Course will teach you all phases of the industry quickly, clearly and correctly. You can master the most modern projects, such as Color TV, printed circuits — even prepare for FCC License without taking a special course. You can handle sales, servicing, manufacturing, or make good money in your own business. SEND FOR FACTS TODAY!

EARN AS YOU LEARN. Many of our students earn their entire tuition and more in Spare Time jobs we show them how to do while learning.

YOU GET EVERYTHING YOU NEED — Clear, profusely illustrated lessons, shop-tested manuals, modern circuit diagrams, practical job projects — all the valuable equipment shown above — many other materials and services — consultation privilege with our qualified staff, and Graduate Employment Service. EVERYTHING YOU NEED for outstanding success in Electronics.

RESIDENT TRAINING AT LOS ANGELES

If you wish to take your training in our Resident School at Los Angeles, the world's TV capital, start NOW in our big, modern Shops, Labs and Radio-TV Studios. Here you work with latest Electronic equipment—professionally installed—finest, most complete facilities offered by any school. Expert, friendly instructors. Personal attention. Graduate Employment Service. Help in finding home near school—and part time job while you learn. Check box in coupon for full information.

MEMBER

FREE! Fully illustrated "Career" Book in TV-Radio-Electronics. PLUS actual sample lesson—yours at no cost, no obligation. CLIP COUPON NOW . . . MAIL IT TODAY!

APPROVED FOR G.I. TRAINING

NATIONAL SCHOOLS

4000 S. FIGUEROA ST., LOS ANGELES 37, CALIF.

NATIONAL SCHOOLS

TECHNICAL TRADE TRAINING SINCE 1905
LOS ANGELES 37, CALIFORNIA

GET FAST SERVICE — MAIL NOW TO

NATIONAL SCHOOLS, DEPT. RC-117
4000 S. FIGUEROA ST.
LOS ANGELES 37, CALIF.

Rush free TV-Radio "Opportunity" Book and sample lesson. No salesman will call.

NAME _____ AGE _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

☐ Check if interested ONLY in Resident School training at Los Angeles.
VETERANS: Give date of Discharge _____

Inventors

The following are the usual preliminary steps to take toward patent protection.

You are advised first, to make a disclosure of your invention. Date, sign and have this document witnessed by two or more persons who are capable of understanding your invention. The "Evidence of Invention" form mentioned below, we offer as a convenience in making your disclosure and in starting action leading toward patent protection.

Mail your disclosure to the registered patent attorney or agent whom you select to assist you, together with a letter authorizing him to conduct a preliminary search among previously granted U. S. patents for similar types of invention. He then prepares for you a report on the probable patentability of your invention and, if the report is favorable, recommends the further course you should take.

This firm is registered to practice before the U. S. Patent Office and is available to assist you in the preparation and prosecution of patent applications. We shall be glad to send you without obligation, the "Evidence of Invention" disclosure form mentioned above and our instructive booklet, "Patent Protection for Inventors"

VICTOR J. **EVANS & Co.** *Merlin M. Evans*
REGISTERED PATENT ATTORNEY
340-M MERLIN BUILDING, WASHINGTON 6, D. C.

FREE! ELIZABETH II COLONIES STAMPS *and illustrated booklet*

RUSH COUPON TODAY! Here's one of the most exciting offers ever made! Generous collection of hard-to-get, beautiful stamps from interesting, colorful British Colonies everywhere — Aden, Fiji Islands, North Borneo, Cyprus, Singapore, Bermuda, just to name a few. They're all *genuine*, all *different* — direct from the largest group of private sources in the world! What a grand addition for your collection — think how they'll grow in value. THERE'S MORE! We'll also send you our free, helpful STAMP COLLECTOR'S GUIDE! For your FREE inspection, we'll include other valuable offers. So RUSH COUPON NOW — add this free offer to *your* collection. If coupon clipped, send 10c for postage, handling to GARCELON STAMP COMPANY, Dept. PS11K, Calais, Maine.

Stamp Collector's Guide

GARCELON STAMP CO., Dept. PS11K, Calais, Maine.
RUSH Colonies stamps, Collector's Guide, other offers. Enclosed 10c for postage, handling. (PLEASE PRINT)

Name.....
Address.....
City.....State.....

SAVE MONEY BUY DIRECT!
World's finest photographic equipment at lowest cost—actually below prices you'd pay in countries where it is made!
FREE! 1958 PHOTO GUIDE
36 pages crammed with "how-to" information; prices, listings of every brand and type camera, lens, accessory, from Europe and Japan at unmatched low prices
SEND POSTCARD TODAY
CAMERA IMPORT CORPORATION
1 East 43 Street, New York 17, N.Y. Dept. 18

I'LL HEAT THAT COLD ROOM
I am a high volume warm air
BOOSTER FAN
Install me in the pipe that runs to your "cold room" and I will keep it warm. Simple to install—fits any pipe 8" or larger. Plugs into 110V socket. Used by furnace men for 20 years. Guaranteed. Directions. Only $8.88 postpaid.
P. K. PRODUCTS COMPANY
417 Grattan Dept. 6117 Topeka, Kan.

BARGAINS LISTS EVERY MONTH HUNDREDS OF TERRIFIC BUYS IN—

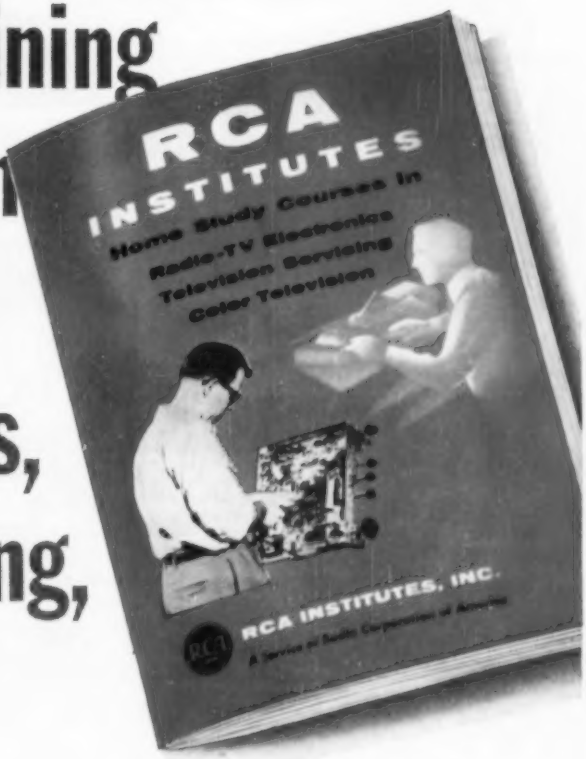
● BANKRUPT, Closeout, Surplus Goods ● New & UNUSUAL items. ● WHOLESALE ITEMS ● BELOW WHOLESALE ● Sources of 100,000 items wholesale. ● Rare Money-Makers opportunities.

HUNDREDS of TERRIFIC offers in Toys, Books, Household goods, Jewelry, Greeting cards, etc.! . . . SAMPLE BARGAINS:— ● Famous $10.00 Perfume at 60c. ● 50c boxes Everyday, Xmas cards, 7c box. ● $1.00 toys, 20c ● $1.98 silk ties, 12½c

● Fenetia, 99c gross ● $17.50 talking dolls at $7.00! PLUS MANY, MANY OTHERS!!
BIG SPECIAL ISSUE NOW OUT! Subscribe NOW! BARGAINS let you BUY BETTER, CHEAPER, NEWER things for yourself or for resale at TREMENDOUS PROFITS.

$1.00 Buys 6 Big issues—1 Yr. $2.00. Reg. Price $3.00 year. Spec. Limited time offer to get 10,000 new subscribers. **The only magazine of its kind published!**
FREE! FREE! With every 1 year sub. to "Bargains" you get the **new 1957 "BUY-IT-WHOLESALE"** Buying Guide—practically gives you sources of 100,000 items wholesale! Scores of wholesale Bargains, closeout offers, jobbers lists, etc. Many helpful articles on making money. Thousands of copies being sold at $1.00 each. Yours FREE with every 1 yr. subscription to Bargains! *(No free copies with 6 mo. sub.—just 1 yr. subs.)*
TOWER PRESS INC., BOX 591, Lynn 864, Mass.

RCA offers you the finest training at home in Radio–TV electronics, TV servicing, Color TV



SEND FOR THIS FREE BOOK NOW!

Pay-as-you-learn. You need pay for only one study group at a time. Practical work with very first lesson. All text material and equipment is yours to keep. Courses for the beginner and advanced student.

RCA INSTITUTES, INC.
A SERVICE OF RADIO CORPORATION of AMERICA
350 WEST FOURTH STREET, NEW YORK 14, N.Y.
In Canada—RCA Victor Company, Ltd.
5001 Cote de Liesse Rd., Montreal 9, Que.

RCA Institutes, Inc., Home Study Dept. PS-117
350 West Fourth Street, New York 14, N. Y.

Without obligation, send me FREE 52 page CATALOG on Home Study Courses in Radio, Television and Color TV. No Salesman will call.

Name.....
Please Print

Address.....

City.....Zone.....State.....

KOREAN VETS! Enter discharge date.....

To save time, paste coupon on postcard

YOU can own and play a famous make Italian

ACCORDION

Buy Direct—Save 50%

No Risk Plan . . .

5 DAYS FREE TRIAL

There's a whole new world of pleasure, satisfaction and popularity waiting for you the day you start playing your accordion. It's easy to learn and it costs so little to own and play a fine Italian Accordion under our famous No Risk Plan. Play simple tunes with few minutes practice. You select the accordion you want from dozens of smart new models . . . and we'll send it to you on FIVE DAYS FREE TRIAL. We are direct factory importers and distributors . . . and because of our huge volume and great buying advantages, actually SAVE YOU UP TO 50% AND MORE OFF REGULAR PRICES. You may have long terms with a low down payment. Trade-ins accepted. Complete Home Study Course included FREE with every instrument. Lifetime guarantee!

Low Down Payment—Easy Terms

It pays to deal direct with an accordion *specialist!* Our buyers travel regularly to Italy where the finest accordions in the world are made. We select only the most outstanding instruments and, each accordion is tested and carefully retuned in our own shops before shipment to you. We invite you to Mail Coupon below for big new color catalog of accordions and facts about this exciting instrument . . . plus lowest wholesale prices . . . ALL FREE. No obligation. Write today.

ACCORDION MANUFACTURERS AND WHOLESALERS OUTLET
DEPT. P-117, 2003 W. CHICAGO AVE., CHICAGO 22, ILL.

Mail Coupon Today!

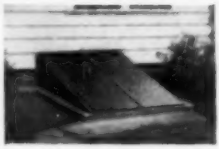
Accordion Manufacturers and Wholesalers Outlet, Dept. P117, 2003 W. Chicago Ave., Chicago 22, Ill.
Please rush Color Catalog of newest Italian Accordions and low wholesale prices.

Name _____
Address _____
City _____ Zone ____ State ____

FREE! BIG COLOR CATALOG and new Low Wholesale Prices

TROUBLE?

with that wornout wood hatchway?



REPLACE IT . . with a modern all-steel BILCO Basement Door. Do it yourself in just 3 to 4 hours. Permanent and weatherproof.

Write for free instructive folder

THE Bilco COMPANY

The Bilco Company, Dept. 972, New Haven 5, Conn.

"How to Make Money with Simple Cartoons"

A book everyone who likes to draw should have. It is free; no obligation. Simply address FREE BOOK

CARTOONISTS' EXCHANGE
Dept. 1911-D Pleasant Hill, Ohio

Secrets of VENTRILOQUISM Now Revealed!

Easy to learn in 60 to 90 days with our Home Study Course. **RESULTS GUARANTEED.** Make Money! Be Popular! Have Fun! Big Opportunity! Radio, Television, Stage Appearances! For Free Information regarding price and terms, WRITE. You must state your age. Dummy Catalog 25c.

MAHER HOME COURSE OF VENTRILOQUISM
Box 36, Studio PS-11, Kensington Station
Detroit 24, Michigan

Now.. GET LONGER LIFE FOR YOUR BATTERY

Amazing "NEW LIFE" battery rejuvenator extends useful life of new or old batteries for many months. Use lights, heater, radio as much as you like. Get sure starts even in zero weather. NO RECHARGING NECESSARY! Money Back Guarantee. Use 1 box for 6 volt, 2 boxes for 12 volt batteries. Rush only $1.00 per box.

JSM PRODUCTS CO. 1118 CASTLETON RD., DEPT. 70 CLEVELAND 21, OHIO

When Writing to Advertisers Please Mention Popular Science

High School at Home

MANY FINISH IN 2 YEARS

No classes. No time wasted going to and from school. Progress as fast as your time and abilities permit. Standard H. S. texts supplied. Thousands enroll each year in this 60-year-old school. Send for FREE descriptive booklet.

AMERICAN SCHOOL, Dept. H846
Drexel at 58th St., Chicago 37, Ill.
Without obligation, please send FREE descriptive booklet.

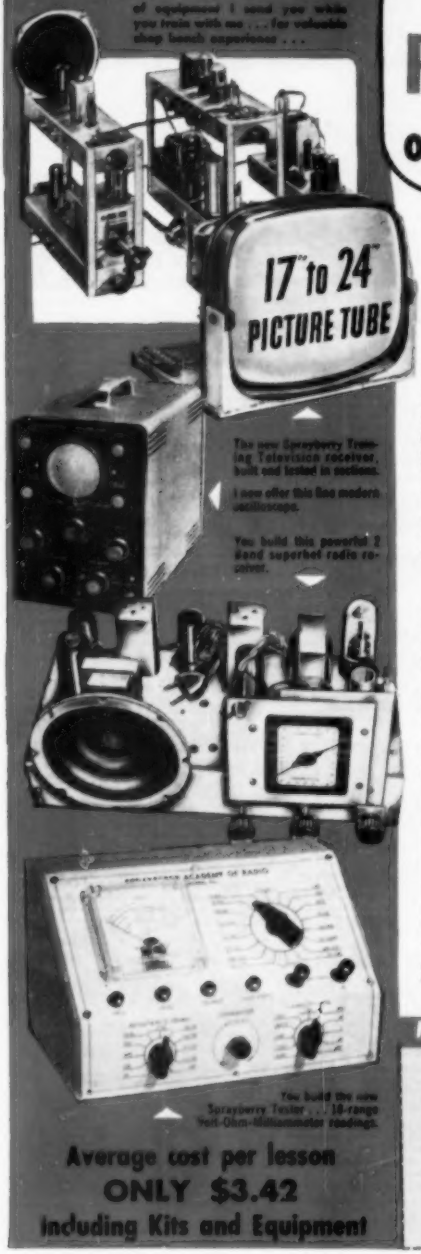
Name .....

Address .....

Complete Canadian Courses available. Write American School, Dept. H846, 6083 Sherbrooke St. W., Montreal

Learn PRACTICAL RADIO-TV with 25 BIG KITS

of equipment I send you while you train with me . . . for valuable shop bench experience . . .



Average cost per lesson ONLY $3.42 including Kits and Equipment

Prepare for a Good Paying Job—Or Your Own Business

"I Will Train You at Home in RADIO-TELEVISION on Liberal No Obligation Plan!"

New Equipment! New Lessons! Enlarged Course! The true facts are yours in my big new catalog . . . YOURS FREE . . . JUST MAIL COUPON!

Frank L. Sprayberry
Educational Director

I can train and prepare you in as little as 10 months to step into the big opportunity Radio-Television service field. Train *without* signing a binding contract . . . without obligating yourself to pay any regular monthly amounts. You train entirely at home in spare hours . . . you train as fast or as slowly as you wish. You'll have your choice of THREE SPRAYBERRY TRAINING PLANS . . . planned for both beginners as well as the more experienced man. Get the true facts about the finest most modern Radio-Training available today . . . just mail the coupon for my big new 56 page fact-filled catalog plus sample lesson—both FREE.

Train the Practical Way—with Actual Radio-Television Equipment

My students do better because I train both the mind and the hands. Sprayberry Training is offered in 25 individual training units, each includes a practice giving kit of parts and equipment . . . all yours to keep. You will gain priceless practical experience building the specially engineered Sprayberry Television Training Receiver, Two-Band Radio Set, Signal Generator, Audio Tester and the new Sprayberry 18 range Multi-Tester, plus other test units. You will have a complete set of Radio-TV test equipment to start your own shop. My lessons are regularly revised and every important new development is covered. My students are completely trained Radio-Television Service Technicians.

NEWEST DEVELOPMENTS

Your training covers U H F, Color Television, F M, Oscilloscope Servicing, High Fidelity Sound and Transistors.

See for Yourself . . . Make Your Own Decision . . . Mail Coupon Today!

The coupon below brings you my big new catalog plus an actual sample Sprayberry Lesson. I invite you to read the facts . . . to see that I actually illustrate every item I include in my training. With the facts in your hands, you will be able to decide. *No salesman will call on you.* The coupon places you under no obligation. Mail it now, today, and get ready for your place in Radio-Television.

SPRAYBERRY ACADEMY OF RADIO-TELEVISION
1512 Jarvis Avenue, Dept. 55-U, Chicago 26, Illinois

Mail This Coupon For Free Facts and Sample Lesson

SPRAYBERRY ACADEMY OF RADIO-TELEVISION
Dept. 55-U, 1512 Jarvis Avenue, Chicago 26, Ill.

Please rush all information on your ALL-NEW Radio-Television Training Plan. I understand this does not obligate me and that no salesman will call upon me. Include New Catalog and Sample Lesson FREE.

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

MEN PAST 40

Afflicted With Getting Up Nights, Pains in Back, Hips, Legs, Nervousness, Tiredness.

If you are a victim of the above symptoms, the trouble may be due to Glandular Dysfunction. A constitutional Disease for which it is futile for sufferers to try to treat themselves at home. Medicines that give temporary relief will not remove the cause of your trouble.

Most men, if treatment is taken before malignancy has developed, can be successfully NON-SURGICALLY treated for Glandular Dysfunction. If the condition is aggravated by lack of treatment, surgery may be the only chance.

NON-SURGICAL TREATMENTS

The NON-SURGICAL treatments afforded at the Excelsior Institute are the result of 20 years research by scientific Technologists and Competent Doctors.

The War brought many new techniques and drugs. These added to the research already accomplished has produced a new type of treatment that is proving of great benefit to man as he advances in years.

The Excelsior Institute is devoted particularly to the treatment of diseases of men of advancing years. Men from all walks of life and from over 3,000 cities and towns have been successfully treated. They found soothing and comforting relief and a new health in life.

EXAMINATION AT LOW COST

On your arrival here, our Doctors who are experienced specialists, make a complete examination. Your condition is frankly explained to you with the cost of treatment you need. Your decision is then made. Treatments are so mild that hospitalization is not necessary—a big saving in expense.

RECTAL COLON

Are often associated with Glandular Dysfunction. We can treat these for you at the same time.

FREE ILLUSTRATED BOOK

The Excelsior Institute has published a New FREE Book that deals with Diseases peculiar to men. It could prove of utmost importance to your future life.

Write today. No obligation.

Excelsior Institute
Dept. B575
Excelsior Springs, Mo.

Gentlemen: Kindly send me at once your New FREE Book on Diseases peculiar to men. I am.....years old.

Name.....

Address.....

City.....State.....

college graduates get ahead faster!

You see it in your own city. They have higher incomes . . . advance more rapidly. Grasp *your* chance for a better life. Industrial growth . . . automation . . . technical advances create career opportunities for engineers, accountants, management experts. Share rewards awaiting college men. Important firms visit campus regularly to employ Tri-State College graduates. Start any quarter in this world-famed college. *Approved for veterans.*

Bachelor of Science degree in 27 months

in Mechanical, Civil, Electrical, Chemical, Aeronautical, Radio (TV-Electronics) Engineering. *In 36 months a B.S. in Business Administration* (General Business, Accounting, Motor Transport Management majors). Superior students may accelerate, 36-weeks course in Drafting. *Intensive program:* technical fundamentals stressed; comprehensive courses with more professional class hours. *Small classes:* personalized instruction. Enrollment limited to 1800. Preparatory courses. *Beautiful campus.* Well-equipped, new and modernized buildings and laboratories. Enter Jan., March, June, Sept. Earnest, capable students (whose time and budget require accelerated courses and lowest costs) are invited to *write Jean McCarthy, Director of Admissions, for catalog and book "Your Career in Engineering and Commerce."*

TRI-STATE COLLEGE

5117 College Avenue — Angola, Indiana

MONEY for MEN ALL DATA FREE

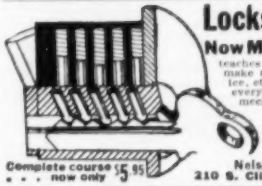
THE PLASTEX Industry needs manufacturers on small scale and for big production of Lamp and Clock Stands, Art Goods and Novelties in Plastex and Marble Imitation. Experience unnecessary. Use material makes regular 10c store sellers. Rubber moulds furnished for speed production. Small investment brings good returns. We are now placing big chain store orders with manufacturers. Ambitious men have chance for real prosperity. Our Free booklet will interest and benefit you.

PLASTEX INDUSTRIES, Dept. 2, 3400 Third Ave., New York 56, N.Y.

. . . Swiss or American

Unique Sweazey System starts you making repairs right away. Develops your skill step-by-step. Teaches **modern methods** . . . professional short cuts. Learn by **personal attendance** or spare time **home study. Free Sample Lesson.** No obligation. Write today!

CHICAGO SCHOOL OF WATCHMAKING
2330 Milwaukee, Dept. 4117, Chicago 47, Ill.



Locksmithing AND KEY MAKING

Now Made Easy! Practical up-to-date course

teaches you how to pick locks, de-code, make master keys, repair, install, service, etc. New self-instruction lessons for every handyman, homeowner, carpenter, mechanic, service station operator, fix-it shop, hardware dealer, gunsmith. 52 easy illustrated lessons. Full price only $5.95, postpaid; or C.O.D. plus postage. Satisfaction or refund guaranteed.

Complete course $5.95 . . . now only

Nelson-Hall Co., Dept. LT-1
210 S. Clinton St., Chicago 6, Ill.

$3 to $5 an hour IN SPARE TIME

WITH NEW FOLEY PRECISION GRINDER

Make $3 to $5 an hour in your own spare time business. Low cost machine sharpens circular saws, rotary mower blades, ice skates, does sanding, polishing, buffing. Easy to operate—no experience needed. Send coupon today for Free circular. No salesman will call.

FOLEY MFG. COMPANY
1176-7 Foley Bldg.
Minneapolis 18, Minn.

Send Free Circular on Foley Precision Grinder.

Name_____

Address_____

WHAT ALL AUTO MECHANICS WANT TO KNOW

This Big Practical Book gives full information, with working diagrams, covering the principles, construction, ignition, service and repair of modern cars, trucks and buses.

Diesel Engines, Hydromatic and Fluid Drives Fully Explained.

A complete guide of 1696 Pages, with over 1500 Illustrations showing inside views of working parts, with instructions for service jobs. Completely up-to-the-minute! Priced at only $6.

CIRCLE No. 1 IN COUPON

HOW TO FIX HOME APPLIANCES

REFRIGERATORS WASHERS TOASTERS DRYERS IRONERS RANGES VACUUMS FREEZERS

Many other GAS AND ELECTRIC APPLIANCES

Handy Reference for Electric & Gas Servicemen, Mechanics, Dealers and Homeowners. Explains clearly and simply how to locate troubles, how to test, reassemble and connect. Wiring diagrams. 1000 Facts. Easy to read. Answers ALL your questions. 864 Pages. Illustrated. Only $6.

CIRCLE No. 2 IN COUPON

TV RADIO SERVICE LIBRARY

TELLS HOW TO ANSWER RADIO T.V. QUESTIONS

HERE IS LATE INFORMATION IN A HANDY FORM FOR RADIO AND TELEVISION REPAIRMEN, SERVICEMEN AND STUDENTS

TWO COMPLETE VOLUMES – 1568 Pages – 1085 Illustrations and Diagrams. 1001 Important Facts and Figures on Modern T.V., Radio, Electronic Devices. INCLUDES TRANSISTORS & Transistors Circuits, Rectifiers, Record Changers, P.A. Systems, Phonograph Pick-ups, F.M., Auto Radio, Short Wave, Basic principles, Construction, Installation, Operation, Repairs, Trouble Shooting. How to get Sharp, Clear T.V. Pictures. Install Aerials. How to Test. Explains COLOR SYSTEMS, Methods of Conversion, Terms, etc. Includes Ultra High Frequency. Quick ready reference or use as a home study course. Only $8 for BOTH volumes.

CIRCLE No. 3 IN COUPON

KNOW YOUR TRUCK

The TRUCK & TRACTOR GUIDE for Mechanics & Drivers, Foremen, Garagemen, Helpers, Owners, Trouble Shooters, Farmers, etc. Covering Gas & Diesel Motor Principles – Construction – Operation – Maintenance – Repair – Brakes – Service of all Parts. 1376 Pages. FULLY ILLUSTRATED. Index. Only $5.

CIRCLE No. 5 IN COUPON

PLUMBERS AND STEAMFITTERS GUIDES

Practical Trade Assistant & Reference Books. Explained in plain language and by clear illustrations, diagrams, charts, graphs and pictures the principles of modern plumbing practice including Pipe Fitting and Air Conditioning. 4 Vols. – 2624 Pages – 3642 Diagrams & Illustrations. Only $6 for the complete set of 4 vols.

CIRCLE No. 6 IN COUPON

PAINTING & DECORATING MANUAL

Inside Trade information on outside and inside work, how to mix paints, preparation of surfaces, paper hanging, wood finishes, tools, synthetic paints, color (with color chart), spray equipment, costs, estimating, etc. A COMPLETE guide to easier, better painting and decorating. 464 Pages. Fully Illustrated. Only $2.

CIRCLE No. 7 IN COUPON

7-DAY FREE EXAMINATION

SEND NO MONEY – Pay the postman nothing! We are glad to send you any of the Audel Guides for absolutely FREE examination in your own home. We take all the risks and leave all the decisions up to YOU. There is no obligation! If you decide to keep the books of your choice you may pay for them under our astounding easy-pay plan of only $2 a month.

HERE IS ALL YOU DO

IT'S EASY TO ORDER. In the No-Risk Mail Order Coupon at the right just draw a circle around the number of Audel Guides you want us to send you for FREE EXAMINATION. We will send them to you at once to help you build a brighter future by increasing your SKILL. If for any reason at all you are not COMPLETELY satisfied, return the books to us, and that will end the matter! NO STRINGS OR CATCHES TO THIS OFFER.

THEO. AUDEL & CO.
49 West 23rd Street, New York 10, N.Y.

CARPENTERS AND BUILDERS GUIDES

PRACTICAL STOREHOUSE OF MODERN CONSTRUCTION INFORMATION (4 vol. set) for carpenters and all woodworkers. Explained in easy language and by profuse illustration principles, advances, short cuts, trade secrets, all based on the NEWEST information.
Vol. 1 – Tools, steel square, saw filing, joinery, furniture, etc.; Vol. 2 – Builders' mathematics, drawing plans, specifications, estimates, etc.; Vol. 3 – House and roof framing, laying out, foundations, etc.; Vol. 4 – Doors, windows, stair building, millwork, painting, etc. 4 vols. 1904 Pages. 1700 Illustrations. Whole set only $8.

CIRCLE No. 8 IN COUPON

PRACTICAL ELECTRICITY

A COMPLETE HANDBOOK – Quick, simplified, ready reference. Complete instruction and practical information on the rules and laws of electricity – Maintenance of Machinery – A.C. and D.C. Motors – Armatures – Wiring Diagrams – House Lighting – Power Wiring – Meters – Batteries – Transformers – etc. Simple to understand. 1520 Pages. 2600 Illustrations. Priced at $6.

CIRCLE No. 4 IN COUPON

DIESEL

ALL THERE IS TO KNOW ABOUT MODERN DIESEL ENGINES – Basic principles, starting valves, timing, fuel pumps, fuel injection compressor, air compressors, pistons, cylinders, lubrication, cooling systems, etc. Answers on operation, calculations. 640 Pages. Fully Illustrated. Priced $3.

CIRCLE No. 9 IN COUPON

WELDERS GUIDE

Covers Electric, Oxy-acetylene, Thermit, Unionmelt welding for sheet metal, spot and pipe welds, pressure vessels and aluminum, copper, brass, bronze and other metals. Airplane work, surface hardening, hard facing, cutting, brazing, etc. 608 Pages. Fully Illustrated. Only $3.

CIRCLE No. 10 IN COUPON

MATHEMATICS MADE EASY

A COMPLETE HOME STUDY COURSE – Starting with the first principles of arithmetic, advancing step by step through the various stages of mathematics, including the rules and calculations for mechanical and electrical problems. New EASY correct methods. Includes plane and solid geometry, trigonometry, algebra, calculus, etc. Practical tests, reference tables and data. How to use slide rule. 752 Pages. 550 Illustrations. Priced at only $3.

CIRCLE No. 11 IN COUPON

NEW MACHINISTS AND TOOLMAKERS HANDBOOK

MODERN MACHINE SHOP PRACTICE – 5 PRACTICAL BOOKS IN ONE. New from cover to cover. Tells how to set up and operate lathes, screw and milling machines, shapers, drill presses and all other machine tools. A COMPLETE INSTRUCTOR AND REFERENCE BOOK. 1728 Pages. Fully Illustrated. Priced at only $6.

CIRCLE No. 12 IN COUPON

WIRING DIAGRAMS

This book gives the practical facts on wiring of electrical apparatus. It explains clearly and SIMPLY how to wire apparatus for all fields of electricity. Each diagram is complete and self-explaining. Know your HOOK-UPS! 304 Pages. Illustrated. Only $2.

CIRCLE No. 13 IN COUPON

REFRIGERATION & AIR CONDITIONING

FOUR BOOKS IN ONE – basic principles, servicing, operation, repair of: 1. Household Refrigeration. 2. Special Refrigeration Units. 3. Commercial & Industrial Refrigeration. 4. Air Conditioning Systems. A GOLD MINE of essential information. Completely up-to-date. 1350 Pages. Fully Illustrated and Indexed. Priced at only $6.

CIRCLE No. 14 IN COUPON

THE NEW ELECTRIC LIBRARY

A COMPLETE ENCYCLOPEDIA explaining in the simplest terms the fundamental principles, rules and applications of applied electricity.

A COMPLETE COLLEGE EDUCATION!

Fully illustrated with diagrams and sketches, calculations and tables for ready reference. Questions and answers. Trial tests for practice study and review. All based on the most modern theory.

Vol. 1 – Principles and rules of electricity, magnetism, armatures, repairs. No. 15

Vol. 2 – Dynamos, DC Motors, construction, installation, maintenance, etc. No. 16

Vol. 3 – Testing instruments and tests, storage battery constr. and repairs. No. 17

Vol. 4 – Alternating current, power factor, alternators, transformers. No. 18

Vol. 5 – A.C. Motors, windings, maintenance, converters, switches, fuses, etc. No. 19

Vol. 6 – Relays, condensers, regulators, rectifiers, meters, switchboards, etc. No. 20

Vol. 7 – Wiring, house light and power, circuits, high tension, plans, code, etc. No. 21

Vol. 8 – Railways, signals, elevators, ignition, etc. No. 22

Vol. 9 – Radio, telephone, telegraph, television, motors pictures. No. 23

Vol. 10 – Refrigeration, illumination, welding, x-ray, electrical appliances. Index. No. 24

7,000 fully illustrated pages.

Priced at only $30 for the ENTIRE SET. Also sold individually for $3 each.

ALL TYPES OF BLUEPRINT READING

How to read scales, the standard symbols, detail and assembly prints, working drawings, short cuts, helps, hints and suggestions. THE MAN WHO CAN READ BLUEPRINTS IS IN LINE FOR A BETTER JOB. This book gives you the secret language, step by step in easy stages. 448 Pages, Very Fully Illustrated. Priced at $3.

CIRCLE No. 25 IN COUPON

MASONS & BUILDERS GUIDES

A PRACTICAL ILLUSTRATED 4 VOL. SET – Explaining in clear, simple language and profuse illustration, principles, advances, short cuts, trade secrets, based on modern practice – including how to figure and calculate various jobs. Vol. 1 – Brick work, bricklaying, bonding, designs. Vol. 2 – Brick foundations, arches, tile setting, estimating. Vol. 3 – Concrete mixing, placing forms, reinforced stucco. Vol. 4 – Plastering, stone masonry, steel construction, blueprints. 4 Vols. 1440 Pages. 2067 Illustrations. Complete Set only $8.

CIRCLE No. 26 IN COUPON

ELECTRIC MOTORS

THIS GUIDE covers the construction, hookups, control, maintenance and trouble shooting of all types of motors. Includes armature winding. Explains entire subject in great detail in simple language. Over 1056 Pages of information. 617 Diagrams. All types of motors fully illustrated and indexed for ready reference. Priced at only $5.

CIRCLE No. 27 IN COUPON

OIL BURNERS

New, complete, explaining in detail both domestic and industrial oil burners. Includes electrical hook-ups and wiring diagrams. Fully covering the theory, construction, installation, operation, testing, servicing and repair of all equipment. Indexed for ready reference. Over 416 Pages. 320 Illustrations and Diagrams. Only $2.

CIRCLE No. 28 IN COUPON

ADDITIONAL IMPORTANT TITLES

The following Audel Guides are all the best in their fields, written in clear simple fashion, all lavishly illustrated. Circle the numbers wanted in the MAIL ORDER COUPON below. All books are sent for FREE EXAMINATION.

No. 29	SHEET METAL PATTERN LAYOUTS 1152 Pages	$7.50
No. 30	SHEET METAL WORKERS HANDY BOOK 448 Pages	2.00
No. 31	MECHANICAL DRAWING GUIDE 192 Pages	2.00
No. 32	MECHANICAL DRAWING AND DESIGN 480 Pages	3.00
No. 33	ELECTRONIC DEVICES 304 Pages	3.00
No. 34	ELECTRICIANS EXAMINATIONS 272 Pages	2.00
No. 35	ELECTRIC POWER CALCULATIONS Pages 488	3.00
No. 36	ELECTRIC DICTIONARY 9000 Terms	3.00
No. 37	POWER PLANT ENGINEERS GUIDE 1568 Pages	5.00
No. 38	ENGINEERS AND FIREMANS EXAMS 544 Pages	2.00
No. 39	OPERATING ENGINEERS LIBRARY 3 Book Set	12.00
No. 40	PUMPS, HYDRAULICS AND AIR COMPRESSORS 1760 Pages	6.00
No. 41	HOUSE HEATING GUIDE 1008 Pages	3.00

MAIL THIS NO-RISK COUPON TODAY!

THEO. AUDEL & CO. — Self Improvement Publishers Since 1879 —
49 W. 23rd Street, New York 10, N. Y.

Please mail me for 7 days' FREE EXAMINATION the books I have circled at right. I agree to mail $2 in 7 days on each book or set ordered, and to further mail $2 a month on each book or set ordered until I have paid the purchase price, plus shipping costs. If I am not completely satisfied with my Audel Guides I may return them.

NAME _____

ADDRESS _____

OCCUPATION _____

☐ **SAVE SHIPPING COSTS!** Check here if you enclose complete payment with order. We pay postage charges. You have same return privilege.

$11	1	2	3	4	5	6
7	8	9	10	11
12	13	14	15	16
17	18	19	20	21
22	23	24	25	26
27	28	29	30	31
32	33	34	35	36
37	38	39	40	41

DOUBLE PROTECTION!

Switch to a
Filter Pipe by MEDICO

Protects you from irritants
Safeguards your pleasure

Nicotine, tars, flakes and juices trapped inside Medico's changeable filter never reach your mouth. When filter is discolored, replace with fresh one. That's why Medico is more enjoyable than any other smoke — *Cleaner . . . Milder Cooler . . . Sweeter*

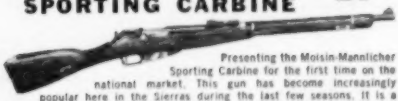
NEW! 1958 series of
MEDICO Crest
Gold Crest Pipe $5.00
Crest Pipe 3.50
Other Medico Filter Pipes $1.50 to $30.00

NYLON BIT GUARANTEED BITE-PROOF

IMPORTED BRIAR

MEDICO
Trademark
FILTER PIPES
For Catalog X-2, write MEDICO, 18 E 54th St. N. Y. 22

DEER HUNTERS!
OUR OWN GUNSMITH'S HIGH VELOCITY
MANNLICHER MODEL SPORTING CARBINE $17.95



Presenting the Moisin-Mannlicher Sporting Carbine for the first time on the national market. This gun has become increasingly popular here in the Sierras during the last few seasons. It is a real bargain in high velocity, precision shooting. **FREE TRIAL:** We include 12 free rounds of target ammunition with each gun. Test your gun without risk and return to us in 10 days if you do not feet it is an outstanding hunter's bargain in every way. Popular 22" bbl. 6-shot, smooth lightning-fast bolt action. Powerful 7.62MM flat trajectory cartridge. Open calibrated sights ideal for brush shooting. **SOFTNOSE HUNTING AMMO SPECIAL:** 20 rds., $2.95. **TO ORDER:** Send check, cash or money order, $5 deposit for C.O.D. Shipped F.O.B. Los Angeles, Calif. Resid. add 4% State Tax.

12 FREE RDS. AMMO

THE ELLNER COMPANY Dept. 53 1206 Maple Ave. Los Angeles 15, Calif.

HOME REPAIR TIP NO. 21

Mend auto seat covers. Cover split seams, tears, with tough, stretchy "SCOTCH" Colored Plastic Tape. Tight-sticking tape is waterproof, washable. Choose red, yellow, green, white, blue, black, brown or clear. ¾" width 25¢—1½" width 50¢—at stores everywhere. Made by Minnesota Mining & Mfg. Co., St. Paul 6, Minnesota. © 1957, 3M Co.

You can start a $40.00 a Day Business

In Your Spare Time!
Make Big Cash Profits In Your Own Home... Sharpening Household, Garden and Shop Tools

Turn spare time into Big Cash Profits with new Belsaw Sharp-All. No experience needed to sharpen knives, scissors, shears, ice skates, mower blades, hedge trimmers, axes, chisels and circular saws . . . Learn how easily you can start your own spare time business. Amazing low cost easy-payment plan. Send Postcard for **FREE BOOK.**
BELSAW SHARP-ALL CO 708 Field Bldg., Kansas City 11, Mo.

STUDY TO BE A DOCTOR
of Psychology or Metaphysics

Obtain a Ps.D., Ms.D., or Ph.D. Be a Teacher, Lecturer or Accredited Practitioner. Teach others how to achieve Health, Happiness and Contentment. Chartered by State. Correspondence courses only. Write for FREE book telling how.

THE NEOTARIAN FELLOWSHIP
Desk 5, Pickwick Building Kansas City 6, Missouri

MAKE MONEY! SAVE MONEY!
REPLATE AUTO CHROME

NOW you can do genuine electroplating right on your own car! You put a brand-new, shiny plating on bumpers, grille, all auto trim. Make your own car look new. Make big money plating other cars. It's easy with amazing new SpeedPlater. Works from your car battery. You plate anywhere around car without removing parts. Complete set with full, easy instructions, only $14.95. Has already plated thousands of cars with wonderful results. Guaranteed to satisfy you or return in 10 days for refund. Order now, or send for FREE details:
EMPIRE MDSG. CO., Dept. PS117, 4 No. 3rd Ave. Mt. Vernon, New York

FREE LAFAYETTE CATALOG
JUST OFF THE PRESS!
NEW 180 PAGE ELECTRONIC CATALOG FEATURING THE BEST BUYS IN THE BUSINESS

Packed with the largest selection of Electronic, Radio and T.V. Parts, and equipment, PA, Hi-Fi systems, tubes, antennas, Transistor Kits, parts and components, Test Equipment, new build your own kits, tools, books, Microscope, drafting equipment, Binoculars, Telescopes, All Radio, TV and Ham supplies—**ALL AT GREAT SAVINGS**—For the economy minded servicemen, dealer, engineer and technician. **CHUCK FULL OF BUYS! SEND FOR YOUR FREE COPY TO-DAY.**

Name _____
Address _____
City _____ Zone _____ State _____

Dept. LL **Lafayette Radio** 165-08 LIBERTY AVE JAMAICA 33, N. Y.

NOW IT'S EASY TO LEARN

DRAFTING

AT HOME - QUICKLY - IN YOUR SPARE TIME

MECHANICAL AERONAUTICAL

HERE'S YOUR CHANCE! No matter where you live . . . no matter what your present job is, you too can soon be cashing big pay checks and enjoying an assured future in drafting! Never before has there been such a demand for trained draftsmen . . . the key men in all industry. No profession has a brighter future! Draftsmen get top pay . . . are in line for promotion to executive positions.

NO EXPERIENCE NEEDED! The Cleveland Engineering Institute Courses are the most modern, practical, thorough, drafting courses available. They are fully illustrated; prepared especially for Home Study. If you can read this ad, you can learn drafting under C.E.I.'s guidance. Ours is a tested, proven, up-to-date course that has helped thousands of others on the road to success (many of them with only grammar school training.)

EARN WHILE YOU LEARN! Keep your present job while learning drafting at home in your spare time at the speed that is best for YOU. Many students, as they advance, earn extra money by doing part-time drafting. Many graduates earn more in a single week, as draftsmen, than the entire cost of the course.

FREE! AFTER YOU GRADUATE, 50 HOURS OF EXTRA TRAINING AT THE INSTITUTE IN CLEVELAND. This post-graduate training is optional.

WE HELP YOU GET THAT JOB! After you have graduated, C.E.I. will help you find a position. Our Job-Finding-Service is the only one of its kind offered by a Home Study School.

WHAT CAN DRAFTING OFFER YOU? Find out how a C.E.I. DIPLOMA can bring you a better life---more security---the respect of your employer and people in your community. Without obligating yourself in any way, write for the Cleveland Engineering Institute Success Book and a Sample Lesson FREE. Industry needs men of action! This means You. MAIL THE COUPON RIGHT NOW!

VETERAN APPROVED

You, Too, Can Have:

- MORE MONEY
- PROFESSIONAL RATING
- BIG PAY JOBS
- BRIGHT FUTURE
- JOB SECURITY
- SUCCESS

EARNS $820 MONTH

"My first position after completing C.E.I.'s course jumped my income from $350 up $820 per month."
G. T. Wiseman, Tennessee

NOW FOREMAN

"Shortly after completing the C.E.I. course I was made Shop Foreman with a 50 per cent increase in salary."
Wm. Reichers, New York

BIG PROMOTION

"I was promoted from the production line ahead of four other men and got a good pay increase after finishing the C.E.I. course."
W. K. Andersen, Wisc.

GOOD START

"The drafting job which I got with your assistance is going very good. The C.E.I. Mechanical Drafting Course has given me a real start."
R. Eisenbart, Wisc.

BIG FUTURE

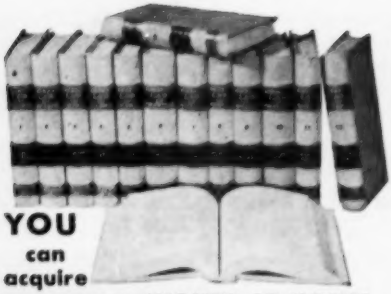
"I have been transferred to the Mech. Eng. dept. as a Mechanical Engr. Trainee. C.E.I. has given me a big push towards future success."
R. Hodge, Netherlands Indies

COMPLETE PROFESSIONAL EQUIPMENT. At no extra cost C.E.I. will supply you with everything you need—including a slide rule, tools and imported, quality drafting set. Drawing pencils, paper, everything is furnished! There is nothing else to buy!

CLEVELAND ENGINEERING INSTITUTE
ENGINEERING DRAFTING EXCLUSIVELY

MAIL COUPON NOW!

CLEVELAND ENGINEERING INST., Dept. PS-116
6300 Euclid Ave. Cleveland 3, Ohio
Please RUSH my Free Success Book and Sample Drafting Lesson in
☐ Aeronautical
☐ Mechanical
My Name ..... Age ...
Address .....
City ..... Zone .... State .....
(No Obligation—No Salesman Will Call)



YOU can acquire

LAW NIGHTS AT HOME! LL.B. DEGREE

LaSalle's famous Law Library—used as reference in many Law libraries and Law offices—has enabled thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, simplified manner.

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you *learn by doing*—handling legal problems—not by memorizing rules.

Send for two FREE booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you, and telling how LaSalle Law graduates are winning rapid advancement in business and public life. Mail coupon below. No obligation.

LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution
417 S. Dearborn St. Dept. 1183L Chicago 5, Ill.

Send me your two FREE booklets described above, without obligation.

Name.....*Age*.....

Street.....

City, Zone & State.....

EARN $100 A WEEK AND UP

BE AN AUTO-DIESEL MECHANIC...EARN WHILE YOU LEARN

Many of our graduates earn $100 a week and up. You learn fast in our school and shops because you learn with tools on real equipment. Experienced instructors explain WHY and show you HOW, then you DO IT YOURSELF. One of the best equipped technical schools in the United States. Thirty-nine years' experience training men. Successful graduates in 48 states and many foreign countries. Approved for veterans. Day and evening classes. Free bulletin—write today.

NASHVILLE AUTO-DIESEL COLLEGE
226 7th Ave. N., Dept. 42 Nashville, Tenn.

INVENTORS

PROTECT YOUR INVENTION BY A U. S. PATENT. SEND FOR FREE "INVENTION RECORD" FORM AND "PATENT INFORMATION EVERY INVENTOR SHOULD HAVE".

CARL MILLER
REGISTERED PATENT ATTORNEY
WOOLWORTH BLDG., 36th FLOOR, 117C
NEW YORK CITY

INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U. S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

JOHN N. RANDOLPH
Registered Patent Attorney
205 Columbian Building Washington 1, D. C.

INVENTORS

U. S. Patents protect your inventions. Our free book of "Instructions on Patent Procedure for Inventors," also "Certificate of Invention" form sent without obligation.

C. A. SNOW & CO.
REGISTERED PATENT ATTORNEYS
426 SNOW BUILDING WASHINGTON 1, D. C.

INVENTORS

Send for PATENT INFORMATION Book and INVENTOR'S RECORD without obligation

GUSTAVE MILLER
117PS WARNER BUILDING
WASHINGTON 4, D.C.

REGISTERED PATENT ATTORNEY
ASSOCIATE EXAMINER U.S. PAT. OFF. 1922-1929
Patent Attorney & Advisor U. S. NAVY DEPT. 1930-1947
PATENT LAWYER

INVENTIONS WANTED

If you want to market, or sell, your invention for cash or royalties, Write for our Free Booklet. Send no drawings. We also welcome hearing from firms, or private capital, wishing to review inventions in any field. We will be glad to send notice of our clients' inventions.

GLOBAL MARKETING SERVICE
2420 77th Ave. Dept. SD Oakland 5, Calif.

FREE MASONITE PLANS...Easy cut-outs to brighten your home for Christmas!

Big, bright, beautiful cut-outs! Santa and his reindeer to prance across your yard...a Peg-Board® Greeting Card tree...a Nativity scene...snowmen and carolers, angels and choirboys. They're all here, all laid out on a grid pattern. You and the family will have a world of fun tracing these scale patterns on economical, durable Masonite® Primecote® Panels!

JUST ASK YOUR NEIGHBORHOOD LUMBER DEALER—He has your plans waiting for you now, *free* plans for all Masonite's Christmas figures. And he has just what you need to bring them to life: Masonite exterior panels. These panels are super-smooth and splinter-free. They cut cleanly, stand firmly. What's more, they're all prime-coated, ready to take on their gay Christmas colors...ready for years of holiday service.

How they'll add to your Christmas spirit—this year and many years to come. These durable Masonite panels take to wintry weather like Santa himself! So act now! Get down to your lumber dealer's...ask him about the full-size tracing patterns for *your* displays...he'll help you with your plans and materials. Or send the coupon below for complete information.

®Masonite Corporation—manufacturer of quality panel products.

MASONITE® PRODUCTS

Insist on Masonite ¼" Primecote Panels for your Christmas cut-outs. They're so easy to paint...so weather-resistant ...so inexpensive.

FREE PLANS!

MASONITE® CORPORATION
Dept. PS-11, Box 777, Chicago 90, Ill.
In Canada: Masonite Corporation, Gatineau, Quebec
Please send me my free Christmas plans and full information about Masonite outdoor panels.

Name .....
Address .....
City ..... *State* .....
Zone ..... *County* .....

OUR BEST VALUE OF THE YEAR!

2½ AMP. RUGGED POWER

¼" THOR SPEEDRILL

Geared Chuck & Key—AC-DC 2400 RPM

BRAND NEW!

If your work calls for a "rugged" drill with POWER to SPARE, insist on a 2½ Amp. job...and make sure it's THOR! No finer drill made! Solid steel, heat-treated helical gears; thrust taken on hardened steel ball and plate; gears permanently packed and sealed in LIFETIME grease! Switch, trigger and lock assembly simplifies locking and release trigger. You'll be wise to buy 2 at this price. Supplies limited!

$14.95 plus 50c pp. & hdlg.

COMPLETE POWER TOOL ACCESSORY SET

100 PIECES

Designed for use in all ¼" Capacity Electric Drills and Motor Chuck

A complete power tool accessory set that can handle almost any job of grinding, sawing, cutting-off, polishing, buffing, cleaning, sanding, drilling, cleaning, etc., etc. KIT CONTAINS:—Wire Wheel, Mounted Grinding Wheels, Rotary File, Abrasive Cartridge Rolls, Circular Saw Blade, Felt Bob and Wheels, Honing Stones, Jewelers Rouge, Buffing Wheels, Midget Steel Cutters, Bristle Brushes, Abrasive Sheets and sufficient Arbors to accommodate all the accounted Items.

Over $15 value ... only **$4.98** ppd

BOLT CUTTERS

Easy working, positive action cutters to do the job intended. Made with black cast alloy steel handles! Drop forged exchangeable cutters. Compound leverage makes a difficult job easy.

12" size $3.95
18" size $5.75
24" size $6.95

plus 35c ea. item pp and hdlg

Gov't Surplus WEBBED TOW CABLE

Originally made for U. S. Air Force. Never used. Test proven for towing trucks, cars, etc. 15 ft. long with extra heavy duty spring snap cable ¾" wide. Nylon reinforced cable ½" thick and 1¾" wide at ends. Useful at home or keep in car for emergencies.

$1.95 plus 35c pp. & hdlg.

Prices SLASHED 50 % on Polyethylene PLASTIC ROLLS!

Mfd. by KOPPERS CO., Inc.

Use As STORM WINDOWS—Dust, Moisture-Proof Protection!

TACK IT, STAPLE IT, HEAT SEAL IT, TAPE IT

Protects from dust, dirt, moisture rust, moths, heat, cold, etc. Transparent. Stains wipe off! Lightweight, strong, inexpensive!

Waterproof, Resistant to Dust, Air, Grease—Unaffected by Heat, Cold

For HOME—Cover auto seats, furniture, mattresses, lamps, rugs, appliances, luggage, silver to prevent tarnish, air conditioners. Use as shower curtains, storm windows. Keep paint off furniture, floors, etc. Wrap food, mothproof wrap clothes.

For OUTDOORS—Cover boats, sports and fishing equipment, tennis courts, cars. Make children's play tents.

For GARDENS—Protect outdoor furniture and equipment, shrubs, plants, newly seeded lawns. Build greenhouses. Cover lawn mowers.

For INDUSTRY—Cover equipment and machinery. Fumigation, oxygen tents. Painter's drop cloth. Floor covers for car trunks, trucks. Chase moisture vapor from crawl spaces, etc. Curing concrete. Keep rain away from outdoor work areas.

36"x100 ft. .004 gauge $6.95
54"x100 ft. .004 gauge 10.95
84"x100 ft. .004 gauge 15.95
120"x100 ft. .004 gauge 22.95

EXTRA SPECIAL

80"x200 ft. .002 gauge $9.95
100"x200 ft. .002 gauge 19.95

Add 50c ea. item for pp. & hdlg.

Wood Working VISE **$2.69** plus 25c pp & hd g.

For home and shop . . . amateur or pro. A mechanically perfect, solidly constructed vise with full 5½" wide jaws that open to 5". Feature smooth working polished steel bars that glide easily back and forth yet firmly and securely lock work for even the finest of precision crafting. Attractive red enamel body.

Send Check or M.O. C.O.D. fee extra MONEY BACK GUARANTEE

SCOTT-MITCHELL HOUSE, INC Dept. M-479, 611 Broadway New York 12, N. Y.

KEEP YOUR... on BENJAMIN for HIGH HOLD C COMP

"First in POWER and ACCURACY"

AIR GUNS & CO_2 GAS GUNS—Top Quality at LOWEST PRICES!

88 Benjamin Super CO_2 Rocket Gas Pistol with 2-Stage Hi-LO Jet Power as low as $13.50

88 or 177 or 22

Benjamin Air Rifles and Benjamin Air Pistols are Recognized All Over the World for Finest Workmanship and Highest Quality at Lowest Prices. Adjustable Power with Amazing Optimum Force. **Fully Guaranteed—Safe—Accurate—Economical.** Easy to Use anywhere—12 Models for Target and Small Game—BB or 177 or 22.

All Models Benjamin CO_2 Carbine Gas Rifles and Benjamin CO_2 Rocket Gas Pistols Use Standard Size CO_2 Cartridges (available everywhere). 2-Stage **HI-LO** Jet Power—**High** for Small Game—**Low** for Target—Up to **50 Shots** from each Cartridge. **No Pumping—Safe—Accurate—Economical—Non Toxic**—12 Models BB or 177 or 22.

FREE! Catalog All Models Benjamin Air Guns & CO_2 Guns & Supplies. Also, Money-Saving Offer on Hunting & Fishing Accessories.

Send Free Gun Catalog and Special Offer!

MAIL TODAY!

BENJAMIN AIR RIFLE CO.
852 BARRY ST., ST. LOUIS 4, MO., U.S.A.

Name _____
Address _____
City _____ State _____

NYLON COLD SUIT WHOLESALE $23 3.98 post paid

ORDER BY MAIL

These brand new below-zero suits cost the government $23.00. Double layer nylon gives unbelievable protection from the cold. Micro tight knit seals body warmth in and locks cold weather out. Light weight - designed for U.S. Jet Pilots. Wear under your jacket for real body comfort. Check these features:

Double layer of water repellent nylon.
Elasticized ankles to seal warmth in.
Heavy duty zippers last a lifetime.
Flex action knees for free movement.

This amazing bargain won't last at this price of $3.98 — Order Now! Specify Large, Medium or Small. **Wool Hood for Head $1.98 Jacket $2.98 (as shown)**

Send to **S&R RESEARCH**, Box M 82, San Gabriel, Calif.

Free! 75 ORIENTALS

Brought to you from the farthest ends of the earth—these exotic valuable genuine **STAMPS** of the Orient! 75 all-different from Borneo, Siam, China, Japan, Hong Kong, Malaya, Sarawak, Singapore—and other exciting mysterious lands of the Far East. **EXTRA!** Free booklet, bargain lists, fascinating offers for your free examination. Send 10c for mailing expenses.

JAMESTOWN STAMP CO., Dept. C11PS, Jamestown, N.Y.

Buried gold—silver—metal objects

HIDDEN TREASURE!

...is easy to find with GOLDAK'S "FIND-IT"; a powerful 3½ lb. locator; only $64.50 complete with earphones, batteries and instructions. Write for FREE literature full line metal, mineral locators, geiger, scintillation counters.

GOLDAK CO., 1544-11 Glenoaks Blvd. Glendale, Calif.

FIX OUTBOARD MOTORS

POWERMOWERS, AND ALL SMALL 2 & 4-CYCLE GASOLINE ENGINES

Repair your own equipment or MAKE EXTRA MONEY in this growing field. Fully illustrated, easy-to-understand, Home Study Course. Write for FREE information.

LINCOLN TECHNICAL INSTITUTE
SUITE 11-G, 472 MARKET STREET, NEWARK 5, N. J.

CASTING SECRETS REVEALED!

Now you can learn how to make big money by casting thousands of perfect plaques, book ends, figurines, etc., with X-L rubber molds.

NO EXPERIENCE. VERY LITTLE CAPITAL NEEDED

X-L, Rubber, Pts. $2.50; Qts. $4.00 (postage extra). Molds and enough rubber for three molds, $1.50 prepaid. U. S. only. Send 25c (refunded with order) for informative catalog (40 pages) describing this wonderful, exciting *Profit-making* business.

HUGE PROFITS! MORE MONEY!

PLASTIC ARTS STUDIO 3403 S. MADISON, DEPT. 3 MUNCIE, INDIANA

B.F. Goodrich • Firestone

TIRE SALE

AT LESS THAN WHOLESALE!

SAVINGS NEVER LESS THAN 50% UP TO 70% OFF REGULAR PRICES

➡ SEND FOR YOUR FREE CATALOG! ⬅

RELIABLE TIRE CO. • 730 MORGAN BLVD. CAMDEN 4, N. J.

PUZZLE: FIND AL

Al's got himself lost in his job.

He does his work. He draws his pay. He gripes, and hopes, and waits. But the big breaks never seem to come.

You have to hunt hard for Al. He's in a rut!

Then, who's the figure standing out in the picture? That's Tom. Tom grew tired of waiting. He decided to act. He took three important steps:

1. Wrote to I.C.S. for their three famous career books.
2. Enrolled for an I.C.S. job-related course.
3. Started to apply—on the spot—what he was learning.

The others began to say, "Ask Tom, he knows." The supervisor began to take notice. The boss began to receive reports on Tom's progress. *And Tom began to move!*

It's a fact worth remembering: **An I.C.S. student always stands out!**

P.S.—You'll find men like Al everywhere—griping, hoping, waiting—reading this and skipping on. But forward-looking fellows like Tom will take time to investigate, will mark and mail the coupon and get the three valuable career books free. They're men of action. And a few short months from now, you'll see them start to move!

For Real Job Security—Get an I. C. S. Diploma! **I. C. S., Scranton 15, Penna.** Accredited Member, National Home Study Council

INTERNATIONAL CORRESPONDENCE SCHOOLS ICS

BOX 03968L, SCRANTON 15, PENNA. (Partial list of 257 courses)

Without cost or obligation, send me "HOW to SUCCEED" and the opportunity booklet about the field BEFORE which I have marked X (plus sample lesson):

ARCHITECTURE and BUILDING CONSTRUCTION
- ☐ Air Conditioning
- ☐ Architecture
- ☐ Arch. Drawing and Designing
- ☐ Building Contractor
- ☐ Building Estimator
- ☐ Carpentry and Millwork
- ☐ Carpenter Foreman
- ☐ Heating
- ☐ Interior Decoration
- ☐ Painting Contractor
- ☐ Plumbing
- ☐ Reading Arch. Blueprints

ART
- ☐ Commercial Art
- ☐ Magazine & Book Illus.
- ☐ Show Card and Sign Lettering
- ☐ Sketching and Painting

AUTOMOTIVE
- ☐ Automobiles
- ☐ Auto Body Rebuilding and Refinishing
- ☐ Auto Engine Tuneup
- ☐ Auto Technician

AVIATION
- ☐ Aero-Engineering Technology
- ☐ Aircraft & Engine Mechanic

BUSINESS
- ☐ Accounting
- ☐ Advertising
- ☐ Business Administration
- ☐ Business Management
- ☐ Cost Accounting
- ☐ Creative Salesmanship
- ☐ Managing a Small Business
- ☐ Professional Secretary
- ☐ Public Accounting
- ☐ Purchasing Agent
- ☐ Salesmanship
- ☐ Salesmanship and Management
- ☐ Traffic Management

CHEMICAL
- ☐ Analytical Chemistry
- ☐ Chemical Engineering
- ☐ Chem. Lab. Technician
- ☐ Elements of Nuclear Energy
- ☐ General Chemistry
- ☐ Natural Gas Prod. and Trans.
- ☐ Petroleum Prod. and Engr.
- ☐ Professional Engineer (Chem)
- ☐ Pulp and Paper Making

CIVIL ENGINEERING
- ☐ Civil Engineering
- ☐ Construction Engineering
- ☐ Highway Engineering
- ☐ Professional Engineer (Civil)
- ☐ Reading Struc. Blueprints
- ☐ Structural Engineering
- ☐ Surveying and Mapping

DRAFTING
- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Drafting Machine Design
- ☐ Electrical Drafting
- ☐ Mechanical Drafting
- ☐ Sheet Metal Drafting
- ☐ Structural Drafting

ELECTRICAL
- ☐ Electrical Engineering
- ☐ Elec. Engr. Technician
- ☐ Elec. Light and Power
- ☐ Practical Electrician
- ☐ Practical Lineman
- ☐ Professional Engineer (Elec)

HIGH SCHOOL
- ☐ High School Diploma
- ☐ Good English
- ☐ High School Mathematics
- ☐ Short Story Writing

LEADERSHIP
- ☐ Industrial Foremanship
- ☐ Industrial Supervision
- ☐ Personnel-Labor Relations
- ☐ Supervision

MECHANICAL and SHOP
- ☐ Diesel Engines
- ☐ Gas-Elec. Welding
- ☐ Industrial Engineering
- ☐ Industrial Instrumentation
- ☐ Industrial Metallurgy
- ☐ Industrial Safety
- ☐ Machine Design
- ☐ Machine Shop Practice
- ☐ Mechanical Engineering
- ☐ Professional Engineer (Mech)
- ☐ Quality Control
- ☐ Reading Shop Blueprints
- ☐ Refrigeration and Air Conditioning
- ☐ Tool Design ☐ Tool Making

RADIO, TELEVISION
- ☐ General Electronics Tech.
- ☐ Industrial Electronics
- ☐ Practical Radio-TV Eng'r'g
- ☐ Practical Telephony
- ☐ Radio-TV Servicing

RAILROAD
- ☐ Car Inspector and Air Brake
- ☐ Diesel Electrician
- ☐ Diesel Engr. and Fireman
- ☐ Diesel Locomotive

STEAM and DIESEL POWER
- ☐ Combustion Engineering
- ☐ Power Plant Engineer
- ☐ Stationary Diesel Engr.
- ☐ Stationary Fireman

TEXTILE
- ☐ Carding and Spinning
- ☐ Cotton Manufacture
- ☐ Cotton Warping and Weaving
- ☐ Loom Fixing Technician
- ☐ Textile Designing
- ☐ Textile Finishing & Dyeing
- ☐ Throwing
- ☐ Warping and Weaving
- ☐ Worsted Manufacturing

Name _____ Age _____ Home Address _____

City _____ Zone _____ State _____ Working Hours _____ A.M. to P.M. _____

Occupation _____

Canadian residents send coupon to International Correspondence Schools, Canadian, Ltd., Montreal, Canada. . . . Special tuition rates to members of the U. S. Armed Forces.

"TOOK IN $217 FIRST 10 DAYS"

Some make more, some less...

We help you to start Your Own All-Year Business

Make Big Money! With our easily operated, highly efficient wall washer, Charles Stelle took in $217 gross in first ten days. E. L. Goss took in more than $10,000 in one year. E. C. Taber wrote, "*I made $400 gross in two weeks.*" And no wonder... this machine washes walls 6 times faster and better than by hand.

Your Money-making Opportunity. We want more men to go into this profitable business for themselves and enjoy independence—freedom from bosses, layoffs. Customers everywhere—homes, offices, schools, churches, hotels, etc. How much you earn depends largely on *you*. What you take in is mostly profit. No need to rent shop or office; operate business from home. Can start spare time until your full time is available.

Lose no time. Get all facts without obligation

FREE BOOK! MAIL COUPON TODAY!

VON SCHRADER MFG. CO.
E11 "W" Pl., Racine, Wisconsin

Send at once (no obligation) your **FREE** booklet containing information about your WALL WASHING MACHINE and how I can start my own permanent, profitable business.

Name_____

Address_____

City_____ Zone____ State_____

WORLD'S LOWEST PRICED ADDING MACHINE

Vest Pocket Size FREE TRIAL

$2.95

$3.04 in Penna. Incl'g 3% Tax

COUNTS UP TO 999,999,999 IDEAL FOR BUSINESS AND PERSONAL USE—GUARANTEED ACCURATE. Not a toy. Operates with only a finger flick. Adds, subtracts, multiplies, divides. Counts up to one billion. Pays for itself over and over. Ideal Gift—for Business, Income Tax and School use. MONEY BACK GUARANTEE. Send name and address. Pay postman only $2.95 plus postage. Beautiful rich-looking Leatherette Case included at no extra cost. Money back in 10 days if not delighted. AGENTS WANTED.

CALCULATOR MACHINE CO., (Mfrs.)
Box 126 Dept. CX-57 Huntingdon Valley, Pa.

LAW FREE BOOK

THE LAW TRAINED MAN

Write today for a FREE copy of illustrated law book, "**THE LAW-TRAINED MAN**," which shows how to earn the professional Bachelor of Laws (LL. B.) degree through home study of the famous Blackstone Law Course. All necessary books and lessons provided. Moderate cost; convenient monthly terms. Write for **FREE** law training book today.

Blackstone School of Law, 307 N. Michigan Ave.
Founded 1890 **Dept. 128 Chicago 1, Ill.**

ROSCO VEST POCKET .22—Brand new 6-shot German revolver that sells in the $28-$30 range. A tight accurate well-made piece. 3" Bbl., 5" overall. Fires popular Amer. made .22 short ammo. Side gate loading. Has a fine steel rifled barrel with blade front sight. Excellent for target or plinking. 10-day money back guar. $14.95. For C.O.D. send $7.50 deposit. Leather holster $2.25. Send check, cash or M.O. to: SEAPORT TRADERS, INC., Dept. 71, 409 E. 12th St., Los Angeles 15, Calif.

CABINET MAKING

LOW COST HOME TRAINING COURSE FOR BEGINNERS & ADVANCED CRAFTSMEN

Make money. Learn skills and secrets of fine woodworking and tool use. Professionally prepared shop method training tells and shows how. Covers everything. Easy to master.

Write for Free Booklet

INTERSTATE TRAINING SERVICE
DEPT. F-2, PORTLAND 13, OREGON

DRAW The First Day!

NO LESSONS! NO TALENT!

New Amazing Invention—"Magic Art Reproducer." You can draw Your Family, Friends, Anything From REAL LIFE—Like An Artist. Even If You CAN'T DRAW A Straight Line! Anything you want to draw is automatically seen on any sheet of paper thru the "Magic Art Reproducer." Then easily follow the lines of the "picture image" with a pencil for an original "professional looking" drawing. Also reduces or enlarges. SEND NO MONEY! Free 10 Day Trial! Pay Postman on delivery $1.98 plus postage. Or send only $1.98 with order and we pay postage. Money Back Guarantee.

NORTON PRODUCTS, Dept. 146, 296 Broadway, N. Y.

"YOU ARE UNDER ARREST!"

Help Bring Crooks to Justice Through Scientific

CRIME DETECTION!

We have taught thousands this exciting, profitable, pleasant profession. Let us teach you **in your own home.** Learn Finger Printing, Firearms Identification, Police Photography, Secret Service Methods thoroughly, quickly, at small cost. Over 800 of all American Bureaus of Identification employ I.A.S. students or graduates. Write for FREE "Blue Book of Crime."

(A Correspondence School Since 1916)

INSTITUTE OF APPLIED SCIENCE, 1920 Sunnyside Ave., Dept. 1368, Chicago 30, Ill.

When Writing to Advertisers Please Mention Popular Science

WHAM-O POWERMASTER $24.95

hunting CROSSBOW

KILLS DEER, BEAR, ETC.
RABBITS, SQUIRRELS,
ALL SMALL GAME

terrific target sport

80 LB THRUST

Centuries old, crossbow shooting is now a fast, modern sport. Powerful and silent. A precision instrument, beautiful as it is accurate. Hunters knock down game at 200 ft. Two-way sights—open and peep—windage and elevation. Anyone can target-shoot right in backyard. Harpoon fish with free line attachment. 34" hardwood stock, 33" bow. Handsome den display. Possession legal in all states except N.J. Money back if not completely satisfied. Arrows 60c each. $24.95 at sports dealers or send to:

WAMO MFG. CO., Box W-12, San Gabriel, California

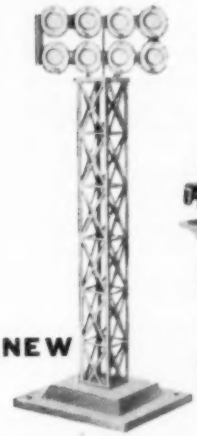
Newest in the LIONEL yards

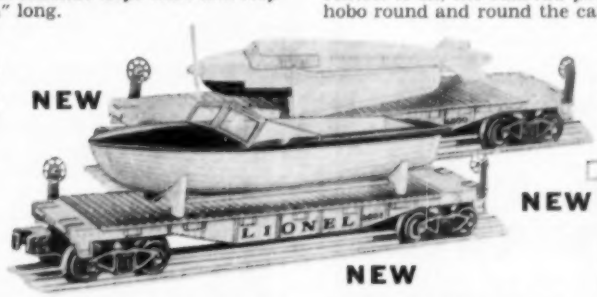
Look at these locomotives, cars and accessories. Then see them and the newest and longest freight and passenger train sets *in action* at your Lionel dealer.

Lionel Super "O" Track with its two realistic flat-top "T" shaped running rails and inconspicuous third rail is authentic even to the molded ties, accurately detailed tie plates and rail spikes.

No. 55 "Tie-Jector" Car. This unusual motorized unit moves under its own power, throwing out ties along the track. Railside trips start and stop the action. Car 6½" long.

No. 3444 Animated Gondola Car. Illustrates the age-old "hobo-railroad cop" feud. When switch control is on, the railroad policeman chases the hobo round and round the cargo.





No. 6801 Boat Car. This flat car carries model cruiser on removable mountings. Boat actually floats in water.

No. 195 Eight-Bulb Floodlight Tower. Powerful lights boosted by reflectors for night yard operations!

No. 6800 Airplane Car. Car-cargo combination! Plane can be removed from car, assembled for take-off.

No. 197 Rotating Radar Antenna. Lionel's "Vibrotor" mechanism rotates antenna continuously, as at airports.

Free New 52-Page Catalog in Full Color. Get your copy at your Lionel dealer.

Hobbyists will want to see Lionel's *new* HO line as well as the "O27," "O," and Super "O" lines.

THE LIONEL CORPORATION, 15 East 26th Street, New York 10, N. Y.

DRAFTSMEN

CASH BIG PAY CHECKS!

Train Now for more success, greater security

LEARN AT HOME IN SPARE TIME
(or at college in Chicago)

Check the want ads in any newspaper—SEE the big-pay opportunities open to you as a draftsman. What's more, you can learn this well-paid, prestige profession at home—quickly, easily! No special talent needed! Get complete, step-by-step Chicago Tech lessons in the mail, spend a few pleasant hours studying each week. In a short time you'll be a well-trained draftsman, ready to take your pick of many good jobs. Act now!

FREE INFORMATION—MAIL COUPON TODAY!
Get FREE TRIAL LESSON plus information about C.T.C. practical training. Learn what successful Chicago Tech graduates say about high pay and opportunities in drafting. No charge, or obligation.

CHICAGO TECHNICAL COLLEGE
P-225 Tech Bldg., 2000 So. Michigan Ave.
Chicago 16, Illinois
Mail me FREE Lesson with information about big opportunities in DRAFTING.

Name .....Age.....
Address.....
City.....Zone....State.....

HIGH WAGES!

Make big pay in the construction industry as an operator of Bulldozers, Draglines, Back Hoes, Scrapers and Motor Graders. Learn these skills NOW! Machines of major manufacturers are used in our training program. Contractors need operators of earthmoving machines and pay high wages to our graduates. Don't be satisfied with just a job . . . learn a career!

Write TODAY for FREE School Catalog,
no obligation, to either address

National School of Heavy Equipment Operation
P.O. Box 8243, Dept. A-5
Charlotte, N. C.

Western National School of Heavy Equipment Operation
P.O. Box 527, Dept. A-5
Weiser, Idaho

GIANT 6 FOOTERS 59c

Wow! Genuine Neoprene government surplus (never used) . . . giant 6 ft. across, 21 ft. around . . . at a fraction of original cost. Durable. Can paint on advertising message, inflate and fly. Visible for miles. Great for attracting crowds to fairs, openings, school proms, gas stations. Fun for young and old in backyards or picnics, at the beach, etc. use as water markers & buoys. Order today—only 59c each.

Special: 2 for $1.00; 5 for $2.00; 13 for $5.00. No C.O.D.

FRANK SALES, 3930 Sunset Blvd., Los Angeles 29, Calif.

SHORTHAND IN 6 WEEKS

Famous SPEEDWRITING shorthand. 120 words per minute. No symbols; no machines; uses ABC's. Easiest to learn, write and transcribe. Low cost. 350,000 graduates. For business and Civil Service. Typing available. 35th Year. Schools in over 400 cities. Write for FREE booklet to:

Speedwriting®
Dept. 2611-7
55 W. 42 St., N.Y., 36, N.Y.

be a CAMERA CRAFTSMAN

LEARN AT HOME

CAMERA REPAIRMEN greatly needed! You can learn manufacturers' service methods at home, in your spare time! Write today.

NATIONAL CAMERA REPAIR SCHOOL
Dept-PS-3 Englewood Colorado

Learn ACCOUNTING
Business Administration

and allied subjects at home. Nationally famous course prepares you to earn BIG money as accountant or office manager, ensuring POSITION, PRESTIGE—SUCCESS. Bonus C.P.A. coaching course FREE to graduates. Course taught by staff of C.P.A. instructors. G.I. APPROVED.

NBI
WRITE FOR FREE BOOK

NATIONAL BUSINESS INSTITUTE
13th & "L" Sts. Dept. A LINCOLN, NEBRASKA

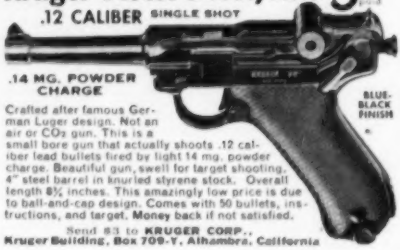
SEND FOR THIS FREE!

Make money. Know how to break and train horses. *Write today for this book FREE*, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here ( ) *Do it today—now.*

BEERY SCHOOL OF HORSEMANSHIP
Dept. 5811, Pleasant Hill, Ohio

Kruger Pistol *Bargain* $3.00 post paid

.12 CALIBER SINGLE SHOT



.14 MG. POWDER CHARGE

BLUE-BLACK FINISH

Crafted after famous German Luger design. Not an air or CO_2 gun. This is a small bore gun that actually shoots .12 caliber lead bullets fired by light 14 mg. powder charge. Beautiful gun, swell for target shooting. 4" steel barrel in knurled styrene stock. Overall length 8½ inches. This amazingly low price is due to ball-and-cap design. Comes with 50 bullets, instructions, and target. Money back if not satisfied.

Send $3 to **KRUGER CORP.,**
Kruger Building, Box 709-Y, Alhambra, California

INSURED TIRE SERVICE
POPULAR BRANDS

SPECIAL! Deduct 10% on orders for Two or More used tires

FREE INSURANCE POLICY Given with each used tire sold. We guarantee the amount of service you pay for.

NOWHERE CAN SUCH QUALITY BE FOUND AT SUCH LOW PRICE!

YOU CAN'T LOSE!!

GOODYEAR SUBURBANITE TYPE SNOW TIRES
New Tire Guarantee—Factory Rebuilt
BEST WINTER TRACTION OF ALL!

670x15 600x16 **$9.95** | 710x15 760x15 650x16 800x820x15 650x15 **$10.90**

Super Quality — Rugged Performance — 6 Months Insured Service							
600x16	$3.65	670x15	$3.95	700x16	$4.45	760x16	$4.75
650x15	3.85	670x16	4.05	710x15	4.35	820x15	4.95
650x16	4.25	700x15	3.95	760x15	4.45	550x17	4.65

Supreme Quality—Nothing Finer—12 Months Insured Service							
600x16	$5.25	475x19	$8.45	700x15(6)	$10.45	700x20	$12.50
600x16(6)	6.75	640x15	4.95	750x16(8)	18.95	750x20(8)	15.90
650x16	5.75	670x15	5.35	700x17	11.95	750x20(10)	17.50
650x16(6)	7.25	710x15	5.45	750x17	16.45	825x20	21.50
700x16	6.35	760x15	6.95	750x15	10.95	900x20	19.95
750x16(6)	8.45	800x15	6.35	30x5	11.25	1000x20	20.45
550x18	4.95	820x15	6.35	600x20	10.95	1100x20	21.25
550x17	4.75	550x15	5.35	650x20	11.75	1000x22	21.95
650x15	5.25	670x16	5.15	32x6(8)	11.95	1100x22	22.75
700x15	5.35	700x16(6)	10.25	32x6(10)	12.75	1100x24	26.95

Whitewalls $1.00 extra.

MIDLAND TIRE SALES

Speedy shipments on Mail Orders. F.O.B. Chicago. Insurance policy sent with each order. Deduct 10% on orders for 3 or more used tires. Send CHECK or MONEY ORDER.—No COD's.
3701 S. Normal, Dept. SS-61, Chicago 9, Ill.

on any object ELECTROPLATE
ANY OBJECT IN HOME, SHOP, GARAGE

NOW with our NEW ELECTROCHEMICAL Outfit. You can easily do your own plating. Not a paint. But a hard durable metal plate, equal to commercial plating. Get your own plating kit with instructions on plating metals and non-metal objects as Tools, Auto Parts, Silverware, Jewelry, Baby Shoes and 1001 other articles with **Chrome, Nickel, Copper, Gold, etc. SEND NO MONEY.** Everything sent C. O. D. for the low price of ONLY $5.95 or send $5.95 now and receive it postpaid. Money back in 7 days if not satisfied. **M. Z. SALES CO.,** Dept. H-13, 113 West 42nd St., New York 36, N. Y.

NEW! ISOTRONIC METHOD

LEARN TV REPAIR IN ONE SHORT WEEK!

Now, after 5 years research - a *streamlined* training system! Earn up to $150 weekly, in just 7 days. No expensive training equipment, or long study. Learn to *service* TV sets instead of building them! Most *practical* method yet - developed by leading scientists *with cooperation of major TV mfg.'s!* Send for details and FREE SAMPLE LESSON. Use it on your set - repair it! - convince yourself! Write: **ELECTRONIC ENGINEERING CO.,** Dept. A-188, 1038 So. La Brea, Los Angeles 19, California

FREE! Sample Lesson

ENGINEERING DEGREE IN 27 MONTHS

B.S. DEGREE IN

AERONAUTICAL, CHEMICAL, CIVIL, ELECTRICAL, MECHANICAL and ELECTRONIC ENGINEERING (Inc. Radio and TV)

Also B.S. DEGREE in 36 mo. in Mathematics, Chemistry, Physics (including Nuclear Physics). Engineering Science preparatory courses. Thorough, practical program. Individualized instruction emphasized. Government approved for G. I.'s

Keeping pace with progress in science and engineering

Spacious campus. 20 buildings; dormitories, gymnasium. Playing field. Modern, well-equipped laboratories including new physics lab and wind tunnel. Low tuition. New terms start quarterly. Enter December, March, June, September. Big demand for graduates. Students from 48 states and 40 foreign countries. Many earn a major part of their college expenses in this large industrial center. Send coupon for free catalog and full information. Enroll now!

INDIANA TECHNICAL COLLEGE

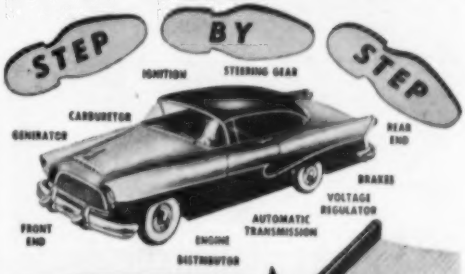
6117 E. Washington Boulevard, Fort Wayne 2, Indiana

Please send me free information on 27 Mo. B.S. DEGREES in:
Aeronautical ☐ Chemical ☐ Civil ☐ Electrical ☐ Mechanical ☐ Electronics ☐
on 36 MONTH B.S. DEGREES in:
Mathematics ☐ Chemistry ☐ Physics ☐

Name.....

Address.....

HOW TO FIX ANY CAR



FREE 7-DAY TRIAL

ANY tune-up, service or repair job on ANY car can be as easy as A-B-C . . . when factory experts show you how-to-do-it *one step at a time.* That's why no job's too tough to handle when you've got MOTOR'S brand-new AUTO REPAIR MANUAL at your elbow!

Book "starts from scratch" — tells you WHERE to start, what TOOLS to use. Whether you're a beginner or an expert mechanic—you can "breeze through" ANY repair on ANY make or model car built from *1949* through *1957!*

Everything You Need to Know in 1000 Big ILLUSTRATED Pages!

NEW, REVISED, 1000-Page Edition contains the "meat" from over 160 OFFICIAL shop manuals—simplified for YOU. 23,436 essential repair specifications on 23 different makes. More than 2,900 "this-is-how" pictures. 225,000 service and repair facts. Leads beginners every step of the way. Time-saving factory repair procedures for experts. Instructions and pictures so clear you CAN'T go wrong. Used by U. S. Army and Navy. 2,500,000 COPIES SOLD!

Covers All Models —1949 thru 1957

Buick	Jeep
Cadillac	Lincoln
Chevrolet	Mercury
Chrysler	Nash
Clipper	Oldsmobile
Continental	Packard
De Soto	Plymouth
Dodge	Pontiac
Ford	Rambler
Hudson	Studebaker
Imperial	Thunderbird
	Willys

Try Book FREE 7 Days

Just mail coupon. (Attach it to postcard, if you wish.) Make Manual PROVE itself. If it's not the greatest time and work saver you've ever seen — return book in 7 days, pay nothing. MOTOR Book Dept., Desk 211, 250 W. 55 St., N.Y. 19

Same FREE offer on MOTOR'S New Truck Repair Manual

Brand new! Covers EVERY job on EVERY popular make gasoline and Diesel truck made from 1949 thru 1957. FREE 7-Day Trial. Check proper box in coupon.

MAIL COUPON NOW FOR 7-DAY FREE TRIAL
(Attach to Postcard if More Convenient)

MOTOR BOOK DEPT.
Desk 211, 250 W. 55th St., New York 19, N. Y.

Rush to me at once (check box opposite book you want):

☐ **MOTOR'S** *New* **AUTO REPAIR MANUAL.** If O.K. I will remit $2 in 7 days, $2 monthly for 2 months and a final payment of 35c (plus 35c delivery charges) one month after last. Otherwise I will return the book postpaid in 7 days. *(Foreign price, remit $9 cash with order.)*

☐ **MOTOR'S** *New* **TRUCK REPAIR MANUAL.** If O.K., I will remit $2 in 7 days and $2 monthly for 3 months, plus 35c delivery charges with final payment. Otherwise I will return book postpaid in 7 days. *(Foreign price, remit $10 cash with order.)*

Print Name..... Age.....

Address.....

City..... State.....

☐ **Check box and save 35c delivery charge** by enclosing WITH coupon in envelope entire payment of $6.95 for Auto Manual (or $8 for Truck Manual.) Same return-refund privilege.

Tense, Nervous Headaches Need This Relief

A survey shows 3 out of 4 doctors recommend the famous ingredients of Anacin to relieve pain. Here's why Anacin® gives better *total* effect in pain relief than aspirin or any buffered aspirin:

- **ACTS INSTANTLY:** Anacin goes to work instantly. Brings fast relief to *source* of your pain.
- **MORE EFFECTIVE:** Anacin is like a doctor's prescription. That is, Anacin contains not one, but a combination of medically proven ingredients.
- **SAFER:** Anacin simply *can not* upset your stomach.
- **LESSENS TENSION:** Anacin also reduces nervous tension, leaves you relaxed, feeling fine after pain goes. Buy Anacin Tablets *today!*

Shrinks Hemorrhoids New Way Without Surgery

Science Finds Healing Substance That Relieves Pain—Shrinks Hemorrhoids

For the first time science has found a new healing substance with the astonishing ability to shrink hemorrhoids and to relieve pain—without surgery.

In case after case, while gently relieving pain, actual reduction (shrinkage) took place.

Most amazing of all—results were so thorough that sufferers made astonishing statements like "Piles have ceased to be a problem!"

The secret is a new healing substance (Bio-Dyne*) —discovery of a world-famous research institute.

This substance is now available in *suppository* or *ointment form* under the name *Preparation H.** Ask for it at all drug counters—money back guarantee.

*Reg. U.S. Pat. Off.

B-11

WANT TO BE A LOCAL BRIKCRETE MANUFACTURER?

High income can be earned operating a Brikcrete plant, because Brikcrete — world's most modern masonry—gives more value for less cost to building owners without sacrifice of profits. Huge savings by local production makes possible low prices and high income potentials. Truly an outstanding manufacturing opportunity.

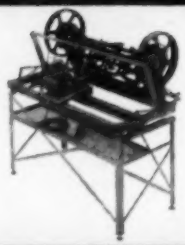
Choice Territories Open

Broad markets are waiting because Brikcrete is popular for every type of residential, commercial and industrial construction. Ultra modern in design, size, proportion. Cost less than lumber. Wide color range. Combines all the features that make for large consumer acceptance. More local plants are needed. Exclusive privileges in franchise-protected territories. Mark-up averages 100% on basic cost. Brikcrete machine available on lease. Write at once for Brikcrete Book No. 2 and tentative reservation of territory.

Brikcrete Associates, Inc., 422 W. 25th, Holland, Mich.

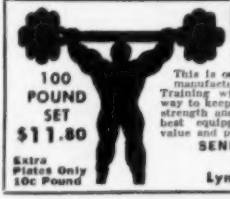
MODERN IMPROVED LAWN MOWER SHARPENER AND BED KNIFE GRINDER

Sharpen any mower in 10 to 20 minutes. Hand—Power—Reel or Rotary. Modern is actually two machines in one, a Precision Bed Knife Sharpener and a Precision Reel Sharpener. Extra Bed Knife Grinder is Absolutely Unnecessary. New Mower Support makes it possible to sharpen reel without removing bed knife. The fastest precision lawn mower sharpener on the market. Costs Less. Compare Modern's Many Exclusive Features Before Buying. Send for Free Brochure No. 11 SN



MODERN MANUFACTURING CO.
160 North Fair Oaks Ave., Pasadena, California

BARBELLS



100 POUND SET $11.80

Extra Plates Only 10c Pound

140-Pound, CHROME DELUXE Barbell-Dumbbell set only **$18.80.** This is our feature set and is the finest ever manufactured.

Training with adjustable weight is the **BEST** way to keep fit; the **ONLY** way to develop great strength and a perfect body. As the oldest and best equipped barbell company, BUR gives value and prices no one can equal.

SEND FOR FREE CATALOG.
BUR BARBELL CO.
Lyndhurst 5, New Jersey

REAL ESTATE BE A BROKER

PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! Graduates report making substantial incomes. Start and run your **own business quickly.** Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in classrooms in leading cities. Diploma awarded. Write TODAY for free book! No obligation.

FREE BOOK TELLS HOW

Approved for World War II and Korean Veterans

WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
2020S Grand Ave. Kansas City, Mo.

...MAKE BIG MONEY WITH RAINBOW ROCK

. . . world's most beautiful stump brick. Cuts building costs by one-third. Sell all you make to contractors, supply houses, others. Needs no special skill. Operates indoors or out from common electric socket. Protected franchise. We help you start. Write for FREE facts.

Praised by architects, builders. Makes inside, outside walls, fences, porches, fireplaces.

GENERAL ENGINES CO., INC.
Dept. SR-117 Route 130, Therefore, N. J.

"I Made $14,839 in 1 Year SERVICING RADIATORS!"

Are you earning under $8,000 a year? Hundreds now making $10,000-$12,000-$15,000 a year servicing auto-truck-tractor radiators the Inland way. Easy to learn. Inland, largest radiator equipment mfgr., offers complete package — equipment, merchandising, "Pays-for-itself" financing, free training. $305 down for equipment starts you. Profitable dept. for garage or service station. Write to

INLAND MFG. CO., Dept. PS-1, 1108 Jackson St., Omaha 2, Nebr.

RUPTURED

BE *FREE* FROM TRUSS SLAVERY

Now there is a new modern Non-Surgical treatment designed to permanently correct rupture. These Non-Surgical treatments are so certain, that a Lifetime Certificate of Assurance is given.

Write today for our New FREE Book that gives facts that may save you painful and expensive surgery, and tells how non-surgically you may again work, live, play and love and enjoy life in the manner you desire. There is no obligation.

Excelsior Hernia Clinic, Dept. 3705 Excelsior Spgs., Mo.

GUNS

DERRINGER

START COLLECTING NOW!

- ☐ Derringer
- ☐ German P 38
- ☐ Colt Cobra .38
- ☐ German Luger
- ☐ German Mauser
- ☐ Spanish Moxley
- ☐ Russian Tokarev
- ☐ Japanese Nambu
- ☐ Italian Brevettata
- ☐ Frontier .44 Colt
- ☐ Belgium Automatic
- ☐ Colt 45 Automatic
- ☐ Czechoslovakian Pistol
- ☐ S & W .38 Police Special
- ☐ Iver Johnson Cadet 55S
- ☐ Mauser 7.62mm Automatic

$3.95 EACH

POSTPAID FOLDER, 10¢

AUTHENTIC REPLICAS Reproduced in Actual Size, Design and Balance. Made of Solid Cast Aluminum. Finished in Gun-metal Black.

©1957

• He-man trophies for Rumpus Room, Cabin, Etc. •

Send Cash, Check or M.O. No C.O.D.'s. No Canada Orders. Add 4% Sales Tax in California.

LYTLE NOVELTY CO.

2656-S11 Fashion Avenue, Long Beach 10, California

EYE GLASSES by MAIL As low as $1.95

WRITE for FREE CATALOG with 14 LENS SAMPLE CARD

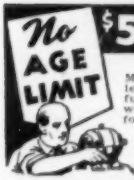
• Thousands of Customers Est. 1939

QUALITY READING-MAGNIFYING OR BIFOCAL GLASSES FOR FAR AND NEAR

ADVANCE SPECTACLE COMPANY, Inc.

537 S. Dearborn St., Dept. SP-11 Chicago 5, Illinois

No AGE LIMIT



$5.00 to $6.00 AN HOUR

IN ELECTRIC APPLIANCE REPAIR

Mechanically inclined men wanted. Earn while learning in spare time at home. Start your own full, part time business repairing refrigerators, washers, irons, lamps; wire homes, do repairs for stores, factories, etc. New shop-method home-training system. Everyone is your prospect! FREE BOOK gives full facts. CHRISTY TRADES SCHOOL, Dept. D-7501, 4804 N. Kedzie Ave., Chicago 25.

Stop Pushing Doorbells!

SELL MASTER UNIFORMS TO BUSINESS MEN

—and make up to $50 in a day!

Say "goodbye" to tiresome, unprofitable house-to-house canvassing! Sell in **volume** to business men and pocket **volume profits fast!** Customers buy from 1 to 100 uniforms for employees all at one time! You make big money **on the spot!** You'll cash in big, because your line of attractive, well-made Master **advertising uniforms** builds company pride and prestige. Company name or trademark is embroidered right on uniforms —employees become "walking advertisements" of tremendous value to the firm. That's why your prospects buy **fast...in volume**...again and again! Your profits zoom to new heights in a hurry! And you never invest one cent. We carry the stock; we ship and collect. All you do is show the line and take **Big Profit** orders! Rush coupon now to get—FREE—your powerful Sample Outfit that has everything you need to start making big money right away!

GEO. MASTER GARMENT CO., C-19
Ligonier, Indiana

You bet I want to make up to $50 in a day selling Master Advertising Uniforms to business men! Rush my FREE profit-packed Sample Outfit right away!

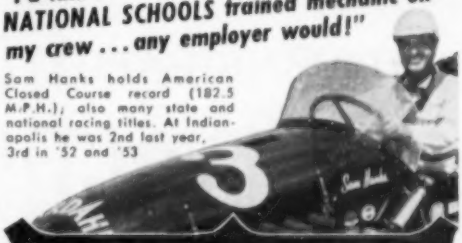
NAME _____

ADDRESS _____

TOWN _____ STATE _____

SAM HANKS, 1957 winner at Indianapolis says:

"I'd like a NATIONAL SCHOOLS trained mechanic on my crew ... any employer would!"



Sam Hanks holds American Closed Course record (182.5 M.P.H.); also many state and national racing titles. At Indianapolis he was 2nd last year, 3rd in '52 and '53

MASTER ALL ENGINES

AT HOME IN YOUR SPARE TIME

NATIONAL SCHOOLS AUTO MECHANICS & DIESEL COURSE

INCLUDING FUEL INJECTION

YOU GET AND KEEP ALL THIS EQUIPMENT

Complete set of professional tools and All-Metal Tool Box. Same top-quality equipment used by expert mechanics everywhere. Use them, display them proudly.

"Motor Analyzing Set" contains Standard Engine Vacuum Fuel Pump Tester, Remote Starter Switch, Modern Timing Light, Standard Compression Tester. Plus compact carrying case & instructions.

Top - quality Socket Wrench with Fittings. Real professional tools you'll use during your lifetime career in repairing all types of engines, from foreign cars to big diesel jobs.

"I've worked alongside National Schools-trained mechanics," reports Sam Hanks. "They're tops, because they get all-around training, and they know how to repair fast and right the first time. No wonder National Schools graduates command top pay."

Earn as you learn men! We'll show you how. Streamlined lessons, diagrams, manuals, latest equipment, *practical* methods prepare you for hundreds of jobs in scores of industries. Free Placement Assistance.

Approved for GI Training

Resident Training at Los Angeles

If you wish to take your Auto-Diesel training in our famous Resident School at Los Angeles, check special box in coupon for full information.

NATIONAL SCHOOLS
Los Angeles 37, California

NATIONAL SCHOOLS

TECHNICAL TRADE TRAINING SINCE 1905
LOS ANGELES 37, CALIFORNIA

NATIONAL SCHOOLS, Dept DC-117
MAIL NOW TO
4000 S. FIGUEROA ST
LOS ANGELES 37, CALIF.

Send for FREE Auto Diesel Opportunity Book and Sample Lesson

NAME _____ AGE _____

ADDRESS _____

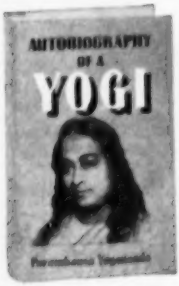
CITY _____ ZONE _____ STATE _____

☐ Check if interested ONLY in Resident School Training at Los Angeles

VETERANS: Give date of discharge _____

A MAN WHO FOUND GOD

AUTOBIOGRAPHY of a YOGI



by PARAMHANSA YOGANANDA

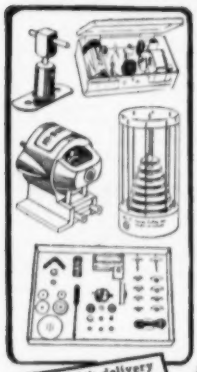
A Spiritual Classic

"These pages reveal, with incomparable strength and clarity, a fascinating life, a personality of unheard-of greatness. The author undertakes the unique task of instructing the Western reader in the practical application of yoga, setting the example in his own life . . . in these pages is undeniable proof that only the mental and spiritual striving of man has lasting value, and that he can conquer all material obstacles by inward strength . . . We must credit this important *Autobiography* with the power to bring about a spiritual revolution." SCHLESWIG-HOLSTEINISCHE TAGESPOST, *daily newspaper of Germany.*

SELF-REALIZATION FELLOWSHIP
(Dept. AP-1) Los Angeles 65, California

At All Bookstores $4.00

ELECTRIC MOTORS - POWER KITS MAKE EXCITING XMAS GIFTS



A gift of Wilson's battery-operated motors and power kits will keep the recipient happy and busy for months. Select from this list of exciting gifts for boys and hobbyists of all ages—and MAIL YOUR ORDER TODAY FOR FAST BEFORE XMAS DELIVERY.

*No. 8-100 Hi-Drive Motor, 3-6V $2.50
No. 9-100 Same for 12V $3.00
No. 3-100 Tiny Atom Motor, 1½-3V $2.00
For higher voltage $2.50
*No. 3113N Tiny Atom motor assembly kit with many acc. $3.50
*No. 14 Adjustable shaft supports kit $3.00
*No. 77 Set of 7 large pulleys, 6 shafts and 3 belts $3.00
No. 3700 Large accessories kit $3.00
*No. 700 Super-Power kit with motor and all accessories $10.00
No. 3000 Vari-speed gear unit. $4.00
No. 1049 Gear train with Hi-Drive motor No. 8-100 ..... $5.95
Same with No. 9-100 Motor. $6.45
* Item illustrated. Ask for FREE Cat.

All Wilson's motors have Permanent Alnico Magnets.

Remit with order and we pay postage in U.S.A. No C.O.D. Add 3% Sales Tax for delivery in Ohio. Write Dept. PS

For quick delivery see your local dealer — or order direct

WILSON'S OF CLEVELAND
425 Lakeside Ave., N.W. • Cleveland 13, Ohio

24 YEARS AT THIS ADDRESS
"We Have No Rent to Pay." That is Why We Can Sell for Less

Our entire stock of very slightly worn EXTRA MILEAGE TOP GRADE Tires. Written Guarantee Sent. SEND AD

EVERYBODY MAY DEDUCT 10% off ON EVERY TIRE

FREE if you buy 2 or more Passenger 4-ply tires, WE GIVE ONE tire FREE, on each order. Does not include W.W. or Truck Tires. Send Ad.

WHITE WALLS $1.00 EXTRA—12 MOS. WRITTEN GUARANTEE

600-16	$5.75	640-15	$5.75	700-15(6)	$8.95	700-20	$12.25
600-16(6)	6.65	670-15	5.75	750-16(6)	10.95	750-20(8)	12.95
650-16	5.75	710-15	5.75	700-17	10.85	825-20	19.55
650-16(6)	7.05	760-15	5.85	750-17	13.75	900-20	19.55
700-16	6.95	800-15	6.05	650-20	11.25	1000-20	19.95
750-16(6)	8.25	820-15	6.25	1100-22	21.75	1100-20	20.55
650-15	5.75	700-16(6)	8.95	1100-24	24.95	1000-22	20.75

"EXTRA SPECIAL" Fully Guaranteed all size 4-ply pass MORE TREAD FOR LONGER WEAR. W. W. $1.00 Extra. Factory Tested Tube given. GIANT TIRE SALE. $8.15

SNOW TIRES $8.95 ea. ORDER ANY 4 PLY PASSENGER SIZE BLACK WALL

Thousands of tires shipped all over the U.S.A. All tires shipped F.O.B. Phila. Send Check or M.O. with this ad. Dept. S. No C.O.D.

STANDARD 834 N. Broad St., Philadelphia 30, Pa.

NOW NO ONE CAN KEEP A SECRET FROM YOU! 36 area magnif. (6x) TELESCOPE only $3.25 postpaid

Amaze your friends... See what they're doing—without being seen!

Money Back guarantee. Send cash, check, or money order today!

Special: Order now, get Free carrying case.

4-range all metal telescope—has 36 area magnification (6x). Watch ball games, look at the moon, stars, animals, distant buildings . . . up close. Bright aluminum tube practically unbreakable. Good on hikes, camping trips, can use either one, two or three extensions. Rotating eyepiece. No assembling, ready-to-use, no special instructions required!

H. R. STONE, Dept. A-11 · 1616 Oak St. · Santa Monica, Cal.

LEARN • EARN MORE MONEY

UPHOLSTERY

YOU'RE IN BUSINESS RIGHT OFF—Practical course, complete upholsterer's tools, materials, frames, all you need to earn while you learn AT HOME. Expert N. Y. State approved training in upholstery, slip covers, etc. Big Opportunity Field. Send for FREE Illust. Catalog, FREE Sample Lesson. Write Today. **Approved for Vets.**

Upholstery Trades School, Dept. FS-1612, 721 Broadway, New York 3, N.Y.

LEARN LOCKSMITHING

Learn fascinating, profitable trade from experts in spare time at home! Age or physical handicap no disadvantage. Year around, steady income. Full or part time. Practical, illustrated lessons. Make money even while learning! All materials and special tools supplied. **Free Booklet.**

Locksmithing Institute, Dept. PS 95
150 PARK AVENUE E. RUTHERFORD, N. J.

Lic. by N. J. State Board of Ed. Approved for Vets

ELECTRIFY YOUR SEWING MACHINE! NEW LOW PRICE! $10.95 90 DAY Guarantee

Buy direct and save! Kit comes fully wired, installed in a jiffy. Fits all machines. ALL-NEW PARTS! • AC-DC Motor & bracket • Multi-speed foot control • Cord set & block • 115 v 60 c • Full instructions • Steel pulley & belt BONUS: 10 day free trial. Reg. $2.95 Sewlite given FREE with kit. Reg. $7.94 pinking shears only $1 with order. Send no money. Kit sent C.O.D. Or send money order and we'll pay postage. State whether wheel on your machine turns towards or away from you. Shipping wt. 6 lbs.

SENIOR SEWING MACHINE CO., Box 142, Dept. FS-22, Bklyn 6, N. Y.

WHAM-O **BLOWGUN SET** for target and hunting

This amazing gun has the accuracy of a rifle. Compression of breath in barrel gives terrific air power. You won't believe your eyes!

SPECIAL $2.98

can shoot over 200 ft. Average person can hit a 2" bullseye at 30 ft. Excellent for shooting small game. For target fun with friends, set up in patio or den. Set includes metal blowgun, rubber mouthpiece, four 5" steel darts and range target. Extra darts 6 for $1. At sports dealers or send:

WAMO MFG. CO., Box 16-H, San Gabriel, California

SAVE 75% ON WORK CLOTHES!

Terrific values you've got to see to believe!

SHIRTS ..... 4 for $2.99 ..... 79c
The used, they're sterilized and ready for tough wear. Blue, green or tan. Send neck size.

PANTS to match. Were $3.95, now only . . . 99c
Send waist measure and inside leg length. 4 for $3.75

COVERALLS $2.29 3 for $6.75 **SHOPCOATS $1.79** 3 for $5.00
Wear 'em used, save plenty! Send chest measurement.

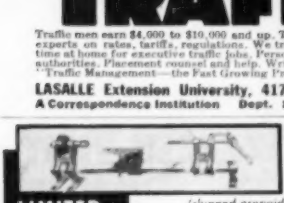
MONEY BACK GUARANTEE . . . if not satisfied! Order TODAY! Send $1.00 deposit on C.O.D. orders. Add 25c for postage on prepaid orders.

GALCO SALES CO. Dept. 2411
7120 HARVARD AVE. CLEVELAND 5, OHIO

BECOME AN EXPERT IN TRAFFIC

Traffic men earn $4,000 to $10,000 and up. Thousands of firms need experts on rates, tariffs, regulations. We train you thoroly in spare time at home for executive traffic jobs. Personal training under traffic authorities. Placement counsel and help. Write for free 48-page book "Traffic Management—the Fast Growing Profession."

LASALLE Extension University, 417 So. Dearborn St.
A Correspondence Institution Dept. 1183T Chicago 5, Ill.



$15.00 3 FOOT LATHE

(shipped prepaid any place in the U.S.)

LIMITED TIME FACTORY OFFER

Real production lathe with 6" swing; all cast iron and steel construction; complete as shown; satisfaction guaranteed or money refunded. Send check, cash, or M.O. Send 10c for catalog on this and other tool bargains.

AMERICAN MACHINE & TOOL CO., Inc., Royersford 5, Pa.

HYPNOTISM

Be Popular Amaze Entertain

Learn to apply Hypnotism and Autosuggestion in short time by training at home. Write to America's oldest, most famous Hypnotic School for free information—now—today. DON'T DELAY. Satisfaction or money refunded. Sent in plain wrapper.

SCHOOL OF APPLIED HYPNOLOGY
Dept. 211 120 Central Park South N. Y. 19, N. Y.

I'll Send You This Handsome SAMPLE CASE-FREE

and Show You How to Make Up to $30.00 in a Day

Mail coupon for this Free Tailoring Sample Case packed with 100 beautiful, big-value suit and overcoat fabrics. Take orders from friends, fellow-workers, others, for fine quality, made-to-measure clothes. Pocket big cash profits in advance. Because wearing our suits and overcoats brings more orders, we make it may for you to get your own clothes without 1c cost. No experience is needed. SATISFACTION GUARANTEED, SEND NO MONEY. Just fill out and mail coupon—today!

J. C. FIELD & SON, Harrison & Throop Streets
DEPT. R-1720 - CHICAGO 7, ILLINOIS

J. C. FIELD & SON, Dept. R-1720
Harrison & Throop Sts., Chicago 7, Ill.

Dear Sir: I WANT A MADE-TO-MEASURE SUIT TO WEAR AND SHOW, without paying 1c for it. Rush details and Sample Kit of actual fabrics, ABSOLUTELY FREE.

NAME ..... AGE .....

ADDRESS .....

CITY ..... STATE .....

MSOE • MSOE • MSOE • MSOE • MSOE • MSOE • MSOE • MSOE

Engineers Needed!

—say national industrial leaders

Become a

MECHANICAL ENGINEER

or

ENGINEERING TECHNICIAN

at

MSOE *in Milwaukee*

Yes, engineers are needed—and for every professional engineer, industry also requires five trained engineering technicians.

Choose MSOE to prepare yourself for a worth-while career in mechanical engineering or technology.

Complete laboratories, and field trips to some of the largest and most progressive industrial plants in Milwaukee—machine shop of the world.

Courses approved for veterans.

Governing board and advisory committees of leading industrialists.

Previous educational, military, and practical experience is evaluated for advanced credit.

Choose from these courses—

MECHANICAL ENGINEERING
B. S. Degree in 42 mos. in plant engineering, industrial engineering, and metallurgy.

ENGINEERING TECHNOLOGY
Associate in Applied Science Degree in 18 mos. in air conditioning, industrial technology, metallurgical technology.

TECHNICAL SERVICE
Service certificate in 6 mos. in refrigeration or metals fabrication.

A complete series courses in Electrical Engineering in electronics, electrical power, and computer technology is also available.

QUARTERS BEGIN SEPTEMBER, JANUARY, MARCH, JULY

MILWAUKEE SCHOOL OF ENGINEERING

For more information, mail coupon today!

Milwaukee School of Engineering
Dept. PS 1157, 1025 N. Milwaukee St.
Milwaukee, Wis. MS-30

Please send the new illustrated career booklet on Mechanical Engineering.
(Please Print)

I'm interested in ..... (course)

Name ..... Age .....

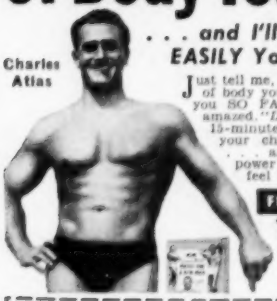
Address .....

City ..... State .....

Are you eligible for veterans educational benefits? .....

Discharge date .....

Check the Kind of Body You Want



Charles Atlas

. . . and I'll Show You How EASILY You Can Have It!

Just tell me, in coupon below, the kind of body you want—and I'll give it to you SO FAST your friends will be amazed. "*Dynamic Tension*," my easy, 15-minutes-a-day method, will make your chest and shoulders bulge . . . arms and legs surge with power . . . your whole body feel "alive!"

FREE BOOK Learn how I became "World's Most Perfectly Developed Man"—Mail coupon! CHARLES ATLAS, Dept. 1L, 115 East 23rd Street, New York City 10, N. Y.

CHARLES ATLAS, Dept. 1L,
115 East 23rd St., New York 10, N. Y.
Dear Charles Atlas: Here's the Kind of Body I want!

(Check as many as you like)

☐ **More Weight—Solid—in the Right Places** ☐ **Powerful Arms, Legs, Grip**
☐ **Broader Chest, Shoulders** ☐ **Slimmer Waist, Hips**
☐ **Better Sleep, More Energy**

Send me absolutely FREE a copy of your famous book showing how "Dynamic Tension" can make me a new man—32 pages, crammed with photographs, answers to vital questions, and valuable advice. No obligation.

NAME _____ AGE _____
(please print or write plainly)
ADDRESS _____
CITY _____ STATE _____

not everyone does as well, but E. O. Lockin, who started a business of his own, reports . . .

for 12 months I've averaged $800 PER MONTH INCOME — *most of it clear profit for me!*

● Many men have discovered how to be independent, to be free of bosses and layoffs. L. A. Eagles grossed more than $200 his first week. Others report gross up to $12,000 per year. How much you make depends largely on *you*. You need no special skill, no large investment.

No shop necessary. Our ELECTRIC RUG WASHER cleans rugs, carpets right on floor . . . helps to show their natural color, beauty. So efficient and safe, used by largest hotels and railroads.

You take no risk. Machines fully guaranteed. Write for full information including how to make big profits in YOUR OWN business.

MAIL COUPON TODAY FOR FREE BOOK

VON SCHRADER MFG. CO., E11 "R" PL, Racine, Wis.

Without obligation, send your **FREE** booklet containing information about your ELECTRIC RUG WASHER and how I can start *my own* permanent, profitable business.

Name _____
Address _____
City _____ Zone ____ State _____

FREE

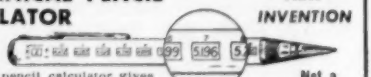
8MM or 16MM Home Movie

FILM

Let me send you a delightful Exciting Film (Real Thriller!) and Special List of Films—all types—FREE! Simply enclose 25c for Shipping. State if 8 MM or 16MM desired. Mail today to: Guy's "Unique" Films, 2424 Entrance Drive, Dept. 2, Hollywood 27, California.

MECHANICAL PENCIL CALCULATOR

NEW INVENTION



MATH-WIZ pencil calculator gives answers automatically to addition, multiplication and square root problems. (Indirect subtraction and division.) Easy to operate, comes in gold anodized aluminum casing. Useful gift for students, engineers, draftsmen and in all industry. Only **$2.29** postpaid. No C.O.D.

Not a Slide Rule

JACK WEISER, 1233 S. Fairfax Ave., Dept. S, Los Angeles 19, Calif.

QUEEN ELIZABETH VISIT

Canada issued a special postage stamp to honor last month's visit of **ELIZABETH** and Prince **PHILIP** to the U.S. and Canada. Get yourself a **FIRST DAY OF ISSUE** cover of this historical new issue for only 35c. Or send us $2.50 and we will include this cover with a fine group of **10 ALL DIFFERENT** Canada and U.S. First Day covers. Your money back if not thoroughly pleased. But order early as supply is limited. Send for our Lists of other covers and stamps available.

K. M. WALSH Box 308-N TUCKAHOE, N. Y.

BUY IT WHOLESALE!

SAVE 30-80%

FOR SELF OR RESELL FOR BIG PROFITS! NAME BRAND APPLIANCES, TOOLS, WATCHES, CAMERAS, PHONOS, SEWING MACHINES, JEWELRY, HOUSEWARES, SPORTING GOODS, TYPEWRITERS, ETC.

GET OUR BIG WHOLESALE CATALOG OF OVER 2,000 PROFIT MAKING ITEMS! POSTCARD BRINGS DETAILS FREE! MAIL TODAY!

Consolidated DISTRIBUTORS CLIFTON 4, N. J.

help your HEART FUND help your HEART

NEW MAGIC RADIO WALKIE TALKIE!

YOUR OWN POCKET SIZE RADIO STATION!

BROADCASTS TO ANY HOME OR CAR RADIO WITHOUT WIRES OR HOOKUPS! Wt. only 5 oz. Size (1½x2½x4½". Built-in telescoping antenna. Powerful Transistor-sensitive microphone, frequency setter, break-in switch! Runs for weeks on self-contained flashlight batteries. Durable plastic case. With this Radio Talkie you CAN TALK TO YOUR FRIENDS UP TO A BLOCK OR MORE AWAY! Talk up to 1 mile or more between two automobiles. INSTANT OPERATION! Just push button to talk! No license needed. Uses inductive field magnetic radiation. Useful and real fun in a million ways! GUARANTEED TO WORK. 1 YEAR SERVICE GUARANTEE. **SEND ONLY $2.00.** (cash, ck, mo) and pay postman $9.99 COD postage or send $11.98 for prepaid delivery. COMPLETE READY TO OPERATE with instructions and hundreds of ways and tricks for broadcasts thru any radio you desire. Price may go up soon, so get your NEW POWERFUL RADIO WALKIE TALKIE NOW. Available only from: **WESTERN RADIO, Dept. RPS-11, KEARNEY, NEBR.**

ALL STEEL BASEMENT ENTRANCE by 'MAN'

Replace Your Old Wooden Doors With Our All Steel Top

- Automatic Steel Top Door (works without heavy lifting)
- All Heavy Gauge Steel
- Burglar Proof
- Weather Proof

FOR BASEMENTS WITHOUT OUTSIDE ENTRANCE

- ★ Our ALL STEEL Complete Entrance Unit
- ★ No Masonry Needed
- ★ Install in few hours
- ★ Just Screw to Foundation
  - Steel Steps
  - Steel Sides
  - Fully Undercoated
  - Will not leak

FOR FREE INFORMATION WRITE TODAY!

MAN PRODUCTS, INC.
397 Jericho Turnpike,
Floral Park, L. I., N. Y.
It's Made Better If "Man" Made

MAN PRODUCTS

RUPTURED? NEW LASTING RELIEF

ENJOY NEW FREEDOM

of action, amazing peace of mind and comfort at work or play. New pleasures replace rupture pain. The proven, patented MILLER holds your rupture back Day and Night . . . bringing you new lasting relief as it has thousands of others.

FREE! Write for relief FACTS free. Send name and address to:
FRED B. MILLER, Dept. J-R
Exclusive Manufacturer
HAGERSTOWN, MARYLAND

Ngwtkyhnad...* apd! †

*New Greaseless Way To Keep Your Hair Neat All Day...
†And Prevent Dryness!

Try new Vitalis® with V-7®

The Xmas Gift for Dad

For his home workshop, painting, etc.—Johnson Red Head Portable Air Compressor makes a perfect gift. He'll love it — find scores of uses. Quality built — delivers 3½ cfm of free air and 50 psi. pressure. Only $44 — less motor. Write for further information.

JOHNSON SERVICE CO. COMPRESSOR DIVISION MILWAUKEE 1, WISCONSIN

A POSTCARD CAN PUT YOU IN A FINE BUSINESS!

Rush Card TODAY for FREE OUTFIT!
Get into highly profitable, repeat-order shoe business! Sell new line of Air-Cushion comfort shoes to friends, neighbors, folks at work! Over 210 dress, sport, work, safety shoe styles for men, women. Never sold by stores. Just 2 easy orders a day—leisure time—bring you $217 extra income a month! No investment. Rush name and address TODAY for FREE SELLING OUTFIT!
MASON SHOE, Dept. 946, Chippewa Falls, Wis.

250 POWER . . . . .

Complete Telescope Lens Kit only $3.49 postpaid

Conquer Space, Explore the Universe, Planets, Moon craters, New Stars, etc. Complete Lens Kit consists of 50 inch focal length ground and polished objective lens, eyepiece lenses for 50 POWER, 100 POWER, 150 POWER, 200 POWER, 250 POWER, and all necessary lens fittings. Easy to make from simple step by step instructions. (Tripod and mount not included.) Money back guarantee.

BUSSE SALES CO., Hartford, Conn., Dept. PS-61

DIESEL MECHANICS IN DEMAND

Learn to earn big pay in DIESEL in our large, modern equipped Chicago school and shop. No previous experience or training necessary. We help you find living quarters and part time job while in school. Complete, practical courses taught in the following trades, under the supervision of experienced, expert technicians.

APPROVED FOR CIVILIANS ☐ OR GI'S ☐

—CHOOSE YOUR TRADE—

CHECK HERE		WEEKS
☐	DIESEL MECHANICS	20
☐	AUTO MECHANICS	20
☐	BODY & FENDER	17
☐	GAS-ARC WELDING	4-12
☐	REFRIGERATION	14
☐	AIR CONDITIONING	9
☐	MACHINIST TRADE	30
☐	ADVANCED MACHINIST (includes tool & die)	33
☐	PIANO TUNING & REPAIR	36

FREE JOB PLACEMENT SERVICE DURING AND AFTER TRAINING

ENGINEERING COURSES

These courses teach practical and technical phases and lead to a degree. They are designed to prepare men for supervisory positions in Diesel-Automotive and Refrigeration-Air Conditioning fields. Students with high school education, or equivalent, will be accepted.

- ☐ DIESEL AUTOMOTIVE ENGINEERING ..... 27 months
- ☐ REFRIGERATION & AIR COND. ENGINEERING ..... 18 months
- ☐ WELDING ENGINEERING ..... 18 months
- ☐ EARTH MOVING EQUIPMENT OPERATORS TRAINING

Latest, most modern road building and construction equipment on 900 acre training area. Learn grading, terracing, land clearing, etc., on crawler tractors, front end loaders, pay loaders, cranes, etc. 200 hour 5 week course or special week end courses.

Start your career with Greer by checking your interest above and mail coupon for complete information at no obligation.

NAME ..... AGE ...
STREET .....
TOWN ..... ZONE ... STATE .....

Established 1902

GREER SHOP TRAINING
Box K, 2238 S. Michigan Ave.
Chicago 16, Illinois

START AS HIGH AS $4,525.00 A YEAR!

Prepare NOW for Next Examinations
Veterans Get Special Preference

MEN—WOMEN, 18-55

Postoffice Clerks-Carriers
Railway Postal Clerks
Stenographers
Accountants
Immigration Patrol Inspectors
Typists
Meat Inspectors
Many Other Early Jobs

MAIL COUPON TODAY SURE

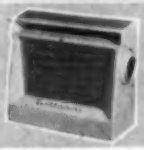
COUPON

FRANKLIN INSTITUTE
Dept. P-90
Rochester 4, N. Y.
(Not Government Sponsored)

Sirs: Rush to me, FREE of charge, list of many U. S. Civil Service big pay jobs. Send FREE 36-page illustrated booklet describing salaries, vacations, benefits, work, etc. Tell me how to prepare for one of these tests.

Name _____
Street _____
City _____ Age? _____

The 6-Transistor Portable That Plays Anywhere!



build your own HEATHKIT *radio and* **SAVE**

HEATHKIT TRANSISTOR PORTABLE RADIO KIT

MODEL XR-1 **$34.95**
(with cabinet, less batteries)

No other portable gives you so many important features at such a low price. You get a 4" x 6" speaker for "big-set" tone—500 to 1000 hour battery life—unbreakable molded plastic cabinet in Holiday Gray—efficient, all-transistor circuit—and easy, step-by-step assembly instructions and pictorial diagrams. Have fun building and using this fine set. Shpg. Wt. 4 lbs.

FREE HEATHKIT CATALOG AVAILABLE

Pioneer in "do-it-yourself" electronics

Describes many more "do-it-yourself" kits for hobby—hi-fi—ham radio—and experimenting. Get your copy now for complete selection of fun projects that save you money.

HEATH COMPANY
BENTON HARBOR 16, MICHIGAN — A SUBSIDIARY OF DAYSTROM, INC.
Please send FREE Heathkit Catalog

NAME _____
ADDRESS _____
CITY & STATE _____

LEARN AT HOME TO MOUNT BIRDS

Animals, Heads, Fishes, Pets; to TAN.
Be a Taxidermist. Profit and FUN.

Hunters, save your valuable **TROPHIES.** Mount ducks, squirrels, everything. Learn to **TAN** for leather and furs. Wonderful **HOBBY** Have a **HOME MUSEUM.** **BIG PROFITS** mounting for others. **INVESTIGATE NOW.**

FREE BOOK With 100 fine game pictures. **NOW** absolutely **FREE. Write TODAY.**

Send Postal TODAY for FREE BOOK. State AGE.
N. W. SCHOOL OF TAXIDERMY, Dept. 2611, Omaha, Neb.

MEN WANTED

Earn $100 Per Week and up
AUTO DIESEL MECHANICS

Master a trade with a future—learn Auto-Diesel mechanics in our shops. You learn with tools on real equipment. Earn while you learn. Many of our graduates earn $100 per week and up. No previous experience necessary. Day and night courses. Approved for veterans. Write for free bulletin.

NASHVILLE AUTO-DIESEL COLLEGE
226 7th Ave., N., Dept. 41 — Nashville 3, Tenn.

Find HIDDEN TREASURES

GOLD, SILVER, PRECIOUS METALS with the Famous Model 27 Metal Detector. Lightweight, ultra-sensitive, low cost. None finer. Also GEIGER COUNTERS for uranium and the VIOLITE for tungsten. INFORMATION FREE

THE *Detectron* CORP.
5528 Vineland Ave., No. Hollywood, Calif.

Antique WOOD TELEPHONE ORIGINAL!

As is, complete $9.00
Working order $12.00

Write for Free list of telephones. All shipments FOB Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. 11A7 — Simpson, Pa.

5 NEW CRUISER KITS

LOW AS $399 Freight Included. FREE COLOR CATALOG

Many other models. Best values in fiberglass covering kits, marine supplies.

18 Ft. Offshore Cruiser

TAFT MARINE WOODCRAFT
Dept. PS-1157 — 636 39th Ave. N. E. — Minneapolis 21, Minn.

GOVERNMENT OIL LEASES LOW AS $1 PER ACRE.

You do no drilling, pay no taxes, may realize a king-size profit without ever leaving home. Write for free map and literature.

AMERICAN OIL SCOUTS, Dept. PS
7321 Beverly Blvd. — Los Angeles 36, Calif.

Mr. "N" Made $9,700 Last Year By Selling Just 20 KEEP/SAFES a Month!

Like Mr. "N" you can profit with KEEP/SAFE—the fine personal safe that undersells all others. Only safe sold direct. 95% of homes, farms and small businesses are prospects. $30 to $71 profit per sale, **plus** bonuses up to $12 a safe. Choice territory chance to become district agent. **FREE DEMONSTRATOR!** Get details, giving address, including county.

John D. Brush & Co., Inc., 577 West Ave., Rochester 11, N. Y.

WAKE UP RARIN' TO GO

Without Nagging Backache

Now! You can get the fast relief you need from nagging backache, headache and muscular aches and pains that often cause restless nights and miserable tired-out feelings. When these discomforts come on with over-exertion or stress and strain—you want relief—want it fast! Another disturbance may be mild bladder irritation following wrong food and drink—often setting up a restless uncomfortable feeling.

For quick relief get Doan's Pills. They work fast in 3 separate ways: 1. by speedy pain-relieving action to ease torment of nagging backache, headaches, muscular aches and pains. 2. by their soothing effect on bladder irritation. 3. by their mild diuretic action tending to increase output of the 15 miles of kidney tubes.

Find out how quickly this 3-way medicine goes to work. Enjoy a good night's sleep and the same happy relief millions have for over 60 years. Ask for new, large size and save money. Get Doan's Pills today!

AMAZING NEW "TI-NEE" RADIO

"TI-NEE" RADIO IS GUARANTEED TO WORK FOR YOUR LIFETIME! USES NO TUBES, BATTERIES OR ELECTRICAL PLUG-INS. Never runs down! SMALLER THAN A PACK OF CIGARETTES! RECEIVES LOCAL RADIO STATIONS MOST ANYTIME, ANYWHERE WITHOUT EXTRA ANTENNA. Uses semi-conductor crystal diode HI-Q Tuner. Beautiful black gold plastic cabinet. **Built-in Speakerphone.**

SEND ONLY $2.00 (bill, ck, mo) and pay postman $4.99 COD on arrival or send $6.99 for postpaid delivery. SENT COMPLETE READY TO LISTEN—NOTHING EXTRA TO BUY EVER! Extra long distance Aerial kit included free to receive stations up to 1,000 miles away. Available only from!

MIDWAY COMPANY, Dept. GPS-11, Kearney, Nebraska

75 POWER TELESCOPE 25X-45X-75X $3.98

New 3 in one telescopes, 3 variable 25X-45X-75X magnification. Brass bound. 25 power for ultra bright images 45 & 75 power for long range. Guaranteed to bring distant stars, moons, objects, sports 75 times closer. Most powerful scope sold anywhere near this amazing low price. American made. 5 sections. Opens 38" closes 1 ft; contains 4 ground & polished lenses. Can also be used as powerful compound microscope. Directions included. Mass production enables us to offer telescope complete at $3.98 postpaid. Money back guarantee. Get yours now.

CRITERION CO., 331 Church St., Hartford, Conn., Dept. PSB-53

FREE-U.S. STAMPS

U. S. 1943 Bi-Colored Flag of Occupied Nations (as illustrated) Airmails, Commemoratives, Regular Issues, included in this collection of 25 selected, all different, genuine U.S. stamps. PLUS VALUABLE U. S. $5.00 STAMP. Everything for 10c to cover mailing expenses. Approvals included. Act at once.

WILLETT CO., P.O. Box 390, Dept. 606, Mount Kisco, N. Y.

Become A - - - BUILDING CONTRACTOR!

MAIL COUPON for FREE BROCHURE

Simplified home study training program. Learn every phase of building, estimating, contracting. Fortunes are made in this line of work every year. Use spare hours—no interference with present work. Diploma awarded. Low tuition rates.

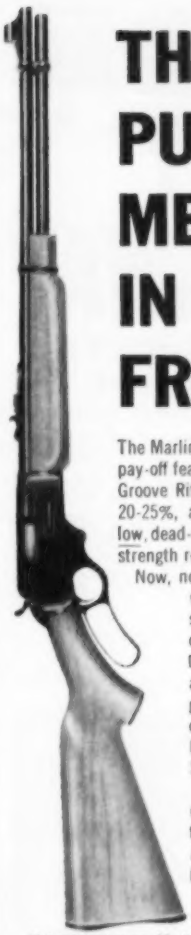
AMERICAN TECHNICAL SOCIETY
Dept. PS-1157, 850 E. 58th Street, Chicago 37, Ill.

Please send me your FREE Brochure and full details of your building, estimating and contracting training program.

Name_____

Address_____

City_____ State_____



THIS ONE PUTS THE MEAT IN THE FREEZER!

The Marlin Model 336 Carbine is famous for pay-off features. Most important are Micro-Groove Rifling*, which boosts accuracy by 20-25%, and side ejection, which allows low, dead-center scope mounting and super-strength receiver design.

Now, new improvements make this fine weapon even finer: Newly designed rear sight • Special finish on stock and forearm, to protect the surface and enhance appearance • Handsome, protective pistol-grip cap • Hooded, ramp front sight on Regular and Texan models • Bishop-style Monte Carlo stock on Sporter Deluxe model.

Choose the 336 Carbine that's right for your type of hunting, from five models and four calibers. Ask your dealer about the Marlin Pay-Later Plan.

ILLUSTRATED: Model 336-C, Regular Carbine. Calibers 30/30, .32 Sp., .35 Rem. • 20" barrel • Tube holds 6 shots.

THE NAME FOR GAME **$76.95****

Marlin

FINE GUNS SINCE 1870

*Patent applied for.
**Slightly higher west of the Rockies. Subject to change without notice.

Marlin Firearms Co. H-117
P.O. Box 995, New York 17, N. Y.

Please send me your catalog with photo illustrations and complete descriptions of all Marlin Guns. Also send me the new, illustrated 16 page "Marlin Target and Game Record Book", for my personal shooting records. I enclose 25¢ for handling.

Name.....

Address.....

City.....Zone.....State.....

PLAY RIGHT AWAY

ANY INSTRUMENT

—even if you don't know a single note now!

NOW it's EASY to learn ANY instrument. No boring exercises. Even if you don't know a single note now, we'll have you playing delightful pieces RIGHT AWAY—right from your FIRST lesson! And properly, BY NOTE. Simple as A-B-C. Make amazing progress. No special "talent" needed. Learn at home in spare time, without a teacher. Only a few cents per lesson. Soon you can play any piece you wish. 900,000 students. (Now in our 59th successful year.)

FREE 36-PAGE ILLUSTRATED BOOK

—just send this ad, with your name and address filled in below to: **U. S. School of Music, Studio A1511, Port Washington, N. Y.** (No obligation; no salesman will call.)

Name _____

Address _____

YOU NEED THIS FREE GIANT 1958 B-A CATALOG

172 KING-SIZED PAGES

EVERYTHING IN RADIO TV AND ELECTRONICS

100'S OF NEW ITEMS LISTED HERE FOR 1st TIME

21 PAGES OF BARGAINS NOT IN ANY OTHER CATALOG

BURSTEIN-APPLEBEE CO.

Dept. PS, 1012 McGee St., Kansas City 6, Mo.

☐ Send Free 1958 B-A Catalog No. 581.

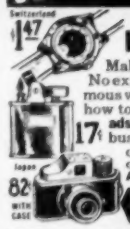
Name _____

Address _____

City _____ State _____

SEND FOR IT TODAY

BUY BELOW WHOLESALE



START YOUR OWN HOME-IMPORT BUSINESS

Make big profits on thousands of exotic imports. No experience or investment in products needed. Famous world trader guides men and women—shows you how to pocket profits before ordering, **how to get free ads**, how to start full or spare time home mail-order business or take volume orders from stores. Export opportunities also. Full details, booklet and list of 157 imports showing amazing low foreign prices—**ALL FREE.** Air mail reaches us overnight. Write

EXAMPLES OF LOW PRICES ABROAD

MELLINGER CO., Dept. G24B 1717 Westwood, Los Angeles 24, Calif.

SALE

20 x 50 REGULARLY $74.50 SAVE $44.55!

High powered, whisper-weight (27 oz.!) color corrected, Achromatic binoculars. 7° high! EZ to hold, EZ to focus. Instant finger-tip adjustment. **SALE PRICE FOR THIS SALE ONLY** including case and straps! Made in Japan. **USE 30 DAYS.** If not satisfied return for refund. Add $1 postage, handling. *Add 10% Tax.* UNITED BINOCULAR CO., 9043 S. Western, CRF-4516, Chicago 20. **DEALERS WANTED**

$29.95

CODs require $2 deposit.

MEN-WOMEN LEARN REWEAVING MAKE MONEY AT HOME

Secrets of French Invisible Reweaving . . . Repair burns, tears, moth holes in Suits, Dresses . . . Like New. VISUAL-WEAVER makes it easy to learn Skil-Weave method of repair. Also learn the principles of French Reweaving. Big profit orders—spare time or full time. Send name, address today for FREE details. **SKIL-WEAVE CO., 338 W. Madison Street, Dept. 1311 Chicago 6, Ill.**

GROW ORCHIDS AT HOME

Purple, White Yellow, Green Every Rainbow Color

World's most thrilling hobby – Successful home grower offers complete illustrated instructions. Tells how to start. Explains temperature, light and humidity conditions needed to grow Cattleyas, Cymbidiums, Odontoglossums & others **in the home.** Many Orchids grow without soil, getting food from the air. Some bloom summer—others winter, spring, fall. Instructions include **real blooming size Orchid plant. FREE**—full details. **Send no money,** just name and address. **TROPICAL FLOWERLAND, Dept. 211, 100 S. Vermont, Los Angeles 4, Calif.**

Hundreds of Families Raising Orchids At Home With Our Help

MAKE $10-$20 AN HOUR

Full or part time, work anywhere.

Serrate and sharpen table, steak knives. Every restaurant, hotel, etc., repeat customers. Write today for proven daily profit plan. Guaranteed.

CUTTER-CRAFT

58-S So. Raymond Pasadena, Calif.

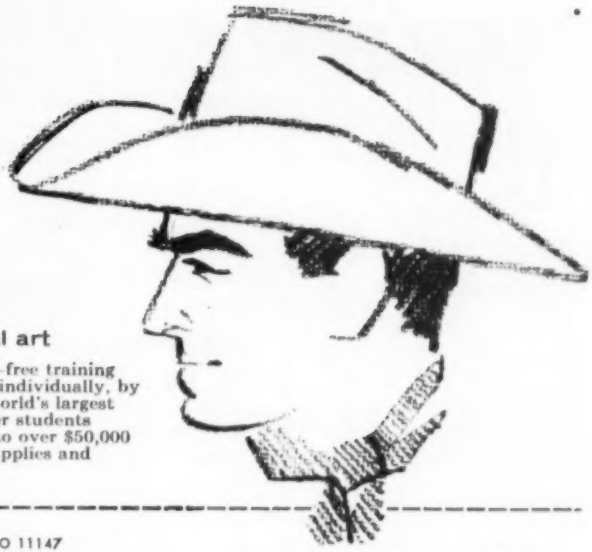
When Writing to Advertisers Please Mention Popular Science

FREE—Amazing Book on RHEUMATISM, ARTHRITIS

If you suffer aches, pains and discomforts of Rheumatism, as manifested in ARTHRITIS, NEURITIS, SCIATICA or LUMBAGO, send today for this FREE Book. It reveals important facts about why drugs and medicine give only temporary relief without removing cause. Explains a proven, specialized system of treatment that may save you years of distress. No obligation. Write for this FREE Book today!

BALL CLINIC, DEPT. 36, EXCELSIOR SPRINGS, MO.

DRAW ME



You may win a $375.00 scholarship in commercial art

Winner gets a complete art course—free training in commercial art. You are taught, individually, by professional artists on the staff of world's largest home study art school. Many former students are now earning from $150 a week to over $50,000 a year. Winner also gets drawing supplies and valuable art textbooks.

ART INSTRUCTION, INC., STUDIO 11147
500 South 4th Street, Minneapolis 15, Minnesota
Please enter my attached drawing in your "Draw Me" contest.
(PLEASE PRINT)

Name_____ AGE____ Phone_____
Address_____ City_____ Zone____
County_____ State_____ Occupation_____

DRAW COWBOY'S HEAD 5 inches high. Use pencil. Drawings for December 1957 contest must be received by December 31. None returned. Winner notified. Amateurs only. Our students not eligible. Mail drawing today.

UNIMAT

MINIATURE MACHINE SHOP

"No bigger than a typewriter, outperforms machines many times its size." That's what Mechanix Illustrated says about UNIMAT in a 3 page feature story. UNIMAT is the precision tool that craftsmen, inventors and hobbyists dream about. You just can't beat it for machining small parts from steel, brass, aluminum, wood and plastic. You'll want a free reprint of this story plus complete information about this amazing 10 in 1 workshop. Write today to:

AMERICAN EDELSTAAL, INC. • UNIMAT DIVISION
Dept. 111 • 350 Broadway • New York 13, N. Y.

ENGINEERING

Dr. Lee DeForest, Father of Radio, Grandfather of TV and all Electronics, exchanging ideas with Heald Electronics instructor.

Heald College Ranks FIRST West of the Mississippi in "Who's Who" in America

Send for FREE Information

Heald Engineering College
Est. 1863
Van Ness at Post, Dept. P.S.-1157
San Francisco, California
Enroll Now for New Term

Thousands of Engineers Needed for Hard Pressed Industry

BACHELOR OF SCIENCE DEGREE, 27 MONTHS

Degree Courses:
- ☐ Electronic Engineering
- ☐ Electrical Engineering
- ☐ Highway Engineering
- ☐ Mechanical Engineering
- ☐ Structural Engineering
- ☐ Civil Engineering
- ☐ Architecture

Diploma Courses:
- ☐ **TELEVISION** ☐ Color TV
- ☐ Tool & Die Design
- ☐ Architectural Drafting
- ☐ Mechanical Drafting
- ☐ Structural Drafting
- ☐ Surveying
- ☐ Estimating
- ☐ Master Electrician

Approved for Veterans

NAME_____
STREET_____
CITY_____
STATE_____

SNOW REMOVAL

With Steering Sulky and Self Starter

- Powerful Gravely Tractor—with *push-button Starter, New Steering Sulky* and *Snowblower*—make snow removal almost child's play!
- You can blow snow — deep or light, wet or dry — wherever you want it, with fingertip maneuverability. 48" Snow Plow also available. 23 year 'round attachments . . . *All on Easy Pay Plan.*

Write today for FREE 24-page "Power vs Drudgery" Booklet!

GRAVELY TRACTORS, INC.
BOX 1184 DUNBAR, W. VA.
FIELD-TESTED SINCE 1922

DO YOU NEED MONEY?

TO PAY FOR YOUR AERONAUTICAL ENGINEERING EDUCATION AND LIVING EXPENSES

while attending school in California?

NORTHROP INSTITUTE'S CO-OP Training Plan is the answer. Write for complete details. No obligation. Also get free Northrop Catalog describing TWO YEAR AERONAUTICAL ENGINEERING CURRICULUM. Remember, there is a waiting list for Northrop Institute Graduates! Approved for Veterans. Send name, address, age and veteran status.

MAIL TO: NORTHROP AERONAUTICAL INSTITUTE
1157 W. Arbor Vitae Street, Inglewood 1, Calif.

Ugly Blackheads—Out in Seconds

$1.00

Keep your complexion free of blackheads—look attractive instantly. Scientifically designed vacuum pump gently "lifts" out ugly blackheads safely, without pinching or squeezing. Try VACUTEX 10 days—if not delighted return for refund. Send $1. We pay postage.

BALLCO PRODUCTS CO. Dept. 46
1011 Mane Concourse, Surfside 41, Florida

Now! **TEST YOUR OWN TV & RADIO TUBES**

for filament breaks

all of them—even picture tube

Nearly half of TV service calls are due to defective filaments. Tester shows if filaments are good. Insert tube in tester. Light shows if tube is burned out. Easy, safe. One service call saved pays for tester. Metal case. AC or DC. Checks fuses, appliances, etc. Only $3.95 ppd. or C.O.D. plus charges. Deluxe Model $4.95. Instructions. Guaranteed.

GEIGER ENGINEERING CORP.
3738 West Lawrence Avenue
Dept. BC-103 Chicago 25, Ill.

AT LAST! The New Electric

RECLAIMO
A Wm. Schwalge Product

For Car Truck & Tractor Engines

The Most Efficient Oil Filter In Automotive History!

Unequalled three-way action provides triple protection, triple savings—

FILTERS—RE-REFINES & STABILIZES
Crankcase Oil

SAVES Oil — SAVES Gas — SAVES Motor

ENDS NEEDLES OIL CHANGING!
Judge for Yourself! Write for Details and Three Months' No-Risk Free Trial Offer.

RECLAIMO MFG. CO.
6251 Touhy Ave., Dept. S-117, Chicago 30, Ill.

Trade-in allowance for old model.

EXCLUSIVE DOUBLE-BEARING
HEAVY DUTY PUMPS

IRRIGATE • DRAIN • CIRCULATE • SPRAY

Up to 7,500 GPH; 1,000 GPH 60' high; or 3,000 GPH from 25' well. Use ¼ to 1 HP motor. 1¼" inlet; 1" outlet. Stainless shaft bronze bearings. Won't rust.

TYPE X—2 oil-less **$10.95**
TYPE XB—Ball bearing model. **$12.95**
Best for belt drives.

Postpaid if cash with order
Don't delay—send for yours today!
MONEY BACK GUARANTEE
Centrifugal and Gear Pumps in All Sizes
LABAWCO PUMPS, Belle Mead 4, N. J.

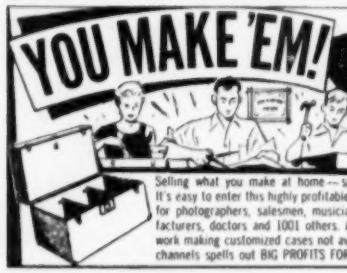
HYDRAULIC JACK REPAIRS

Earn While You Learn at Home

Millions of jacks in gas & auto-service stations, truckers, body-shops, rigger, factories, farms need servicing. We show you HOW—easy step by step directions—what tools to use. EARN UP TO $5 an hour, in spare time, in your own basement or garage. Start your own business NOW. Write for folder No. PS-11 & free bonus offer.

Institute of Hydraulic Jack Repair
P.O. Box 50, Bloomfield, N. J.

YOU MAKE 'EM! WE SELL 'EM! EVERYWHERE...



YES! MY NATIONWIDE SALES ORGANIZATION WANTS TO WORK FOR YOU!

Selling what you make at home—sparetime or full time. It's easy to enter this highly profitable field of making cases for photographers, salesmen, musicians, instrument manufacturers, doctors and 1001 others. A few hours of simple work making customized cases not available in the ordinary channels spells out BIG PROFITS FOR YOU.

I'll show you, as I have shown hundreds of others how to make real money in this fascinating craft, and don't forget! I sell what you make when you follow my simple plan. Age is no barrier . . . Write for full, FREE, details today!

ABARSI CASECRAFT 807 SUNSET BOULEVARD Dept.211 Los Angeles, Calif.

Mr. & Mrs. Cook at 53, paid all debts; bought a new home; created wonderful income.

SO CAN YOU!
POSITIVE PROOF SENT TO YOU FREE!!!

ELECTRIC POWER

WEN TOOLS FOR YOUR HOME WORKSHOP

PROVED BEST FOR THE MONEY BY FAR

POWER SAW

8 SAWS IN 1

No equal. Cuts anything—2x4's in seconds—½" steel—scrolls, circles, dovetails, straights, angles. 3 blades—coarse, medium, fine.

Only $29.95

2 SPEED POWER DRILL

⅜" drill 1000-3000 RPM. Speed change simple, positive. Provides right speed for different jobs. With attachments, it's a whole work shop.

Only $29.95

Superbly made. U.L. approved. Fully guaranteed. Here's top quality at lower cost.

They make Grand Gifts Too!

NEW FEATHER-LIGHT 100-WATT

ELECTRONIC SOLDERING GUN

Weighs only 19 oz. Heats in 3 seconds. Spotlight. Long reach, long life tips. Ideal for home, shop.

Only $5.95

Other WEN products—"Quick-Hot" Soldering Guns and Kits $7.95 to $12.95. Sander-Polishers and Kits $13.95 to $19.95. Saw Table $12.95.

WEN PRODUCTS, INC., 5808 NORTHWEST HIGHWAY, CHICAGO 31, ILL.

(Export sales, Scheel International, Inc., Chicago)

SELECT A HI-FI KIT

...AS CAREFULLY AS A FACTORY-ASSEMBLED SPEAKER ENCLOSURE

Get the facts...compare...and you'll buy University KwiKits!

KEN-12 for 12" speakers & systems $44.75*
KEN-15 for 12" or 15" speakers & systems $59.00*

*USER NET

ROOM-BALANCED PERFORMANCE

HEAVIER CONSTRUCTION

PRECISION MECHANICAL DESIGN

NEW FOLDED HORN DESIGN

EVERYTHING YOU NEED

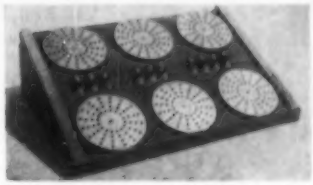
PROFESSIONAL RESULTS

- Genuine Korina Veneer
- Decorative Front Moldings
- Textured Grille Fabric

Write for FREE ILLUSTRATED KwiKit BOOKLET
Desk B-1, University Loudspeakers, Inc.,
80 So. Kensico Ave., White Plains, N. Y.

LISTEN *University sounds better*

Can you think faster than this Machine?



Be careful before you answer. GENIAC the first electrical brain construction kit is equipped to play tic-tac-toe, cipher and encipher codes, convert from binary to decimal, reason in syllogisms, as well as add, subtract, multiply and divide. Specific problems in a variety of fields—actuarial, policy claim settlement, physics, etc., can be set up and solved with the components. Connections are solderless and are completely explained with templates in the manual. This covers 33 circuits and shows how new ones can be designed.

You will find building and using GENIAC's a wonderful experience; one kit user wrote us: "this kit has opened up a new world of thinking to me." You actually see how computing, problem solving, and game play (Tic-tac-toe, nim, etc.) can be analyzed with Boolean Algebra and the algebraic solutions transformed directly into circuit diagrams. You create from over 400 specially designed and manufactured components a machine that solves problems faster than you can express them.

Schools and colleges, teachers of science or math, engineering, philosophy or psychology will find these excellent demonstrators of circuitry, solutions in symbolic logic, theory of numbers, cybernetics, and automation.

SEND for your GENIAC kit now. Only $19.95 with over four hundred components and parts, fully illustrated manual and wiring diagrams. We guarantee that if you do not want to keep GENIAC after one week you can return it for full refund. Add 80c west of Mississippi. $2 outside U.S. Mail Name & Address with check or money order to

OLIVER GARFIELD CO., INC., DEPT. PS-117A
126 Lexington Avenue
NEW YORK 16, N. Y.

avoid a costly mistake
in your high fidelity system

FREE
HI-FI
BOOKLET

describes . . . the important advantages of playing your records on a precision turntable!

SEND COUPON TODAY!

RK1
PS

NAME _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

REK-O-KUT COMPANY, INC.
38-01 Queens Blvd., Long Island City 1, N. Y.

PREPARE FOR BETTER JOB, BIGGER PAY IN SPARE TIME AT HOME

Today, choose the job you want—and prepare for it in time you might otherwise waste. Or if you are already in the work you like best, start training now for quicker promotion and increased pay. During the past 60 years AMERICAN SCHOOL has helped ambitious people to reach higher goals. Check subject that interests you and mail coupon for full information.

AMERICAN SCHOOL, Dept. G646, Drexel at 58th, Chicago 37, Ill.
Without obligation, please send FREE and postpaid, full particulars about the subject checked below.

- ☐ Accounting
- ☐ Apprenticeship Courses
- ☐ Architecture & Building
- ☐ Automotive Technician
- ☐ Better Foremanship
- ☐ Blueprint Reading
- ☐ Bookkeeping
- ☐ Business Management
- ☐ Civil Engineering
- ☐ Contracting
- ☐ Diesel Technician
- ☐ Drafting—Building Trades
- ☐ Drafting—Machine Trades
- ☐ Electrical Engineering
- ☐ Electricity—Practical
- ☐ Electronics—Industrial
- ☐ HIGH SCHOOL COURSES
- ☐ Machinists
- ☐ Mechanical Engineering
- ☐ Mechanical Technology
- ☐ Metalworking Courses
- ☐ Plumbing—Practical
- ☐ Private Secretary
- ☐ Retail Merchandising
- ☐ Sales: onship—Outside
- ☐ Sheet Metal Work
- ☐ Tool Making

NAME ..... OCCUPATION ..... AGE .....
HOME ADDRESS .....
CITY ..... STATE .....
Canadians: Write American School, Dept. G646, 4083 Sherbrooke St. W., Montreal

MAIL COUPON NOW

Works in seconds!

3 OZ. CAN
30c

Loosens Rusted Bolts
nuts . . . screws . . . parts
LIQUID WRENCH

The super-penetrating rust solvent that quickly loosens rust and corrosion.
AT HARDWARE STORES, GARAGES, FILLING STATIONS EVERYWHERE
For information write manufacturer
RADIATOR SPECIALTY CO.
Charlotte, N. C.

See Stars Close Up!

3" REFLECTING TELESCOPE
FAMOUS MT. PALOMAR TYPE

60 & 120 Power—An Unusual Buy!

Assembled—ready to use! You'll see the Rings of Saturn, fascinating planet Mars, huge craters on Moon, Star Clusters, Moons of Jupiter. Aluminized and overcoated 3" diameter high-speed f/10 mirror. Optical Finder included. Sturdy, hardwood, portable tripod. Order by Stock No.—Send check or M.O.—Money-back guarantee!
FREE: Star Chart plus Big Astronomy Book Stock No. 85,050 N. **$29.50** f.o.b.
Write for FREE catalog N Barrington, N.J.
EDMUND SCIENTIFIC CO., Barrington, N. J., U. S. A.

WONDER STAMP!

THROW AWAY YOUR OLD-FASHIONED RUBBER STAMP.

NEVER NEEDS INK PAD
Prints over 60,000 impressions. Guaranteed. Dries instantly. All stock business words—AIR MAIL etc. Specify desk or pocket size
$1 ea. ppd. $2.98 for 3 lines your name-address.
SIG OF CALIFORNIA
16231 Dickens St., Dept. P-11, Encino, California

LEARN WHILE ASLEEP!

Exciting details free!
Sleep-Learning Research Association
P.O.Box 61U-F Omaha, Nebraska

RUPTURE

RELIEF...OR YOUR MONEY BACK
Write now for free booklet and pictures of rupture care. You can be helped...work steady, with low cost, easy to wear Web Truss, thousands satisfied.
WEB TRUSS CO. Dept. PS-11, Hagerstown, Maryland

1 Bit to DRILL · REAM · SAW
IN SHEET METAL · WOOD · ANGLE IRON · TRANSITE · BAKELITE

Fits any ⅛" or ½" electric drill or drill press

Drill's own ¼" starter hole; cuts straight, curves, or angles. Made of finest High Speed, abrasion-resistant steel. Easy to use.

New, Low Price $2.95
Postpaid 3 for $8.50
Money-Back Guarantee
Specify Bit for Wood, Heavy Metal, All-Purpose
Check or Money Order
Ideal Gift
DEALER INQUIRIES WELCOME
INTERNATIONAL TWIST DRILL CORP.
618 Wyandotte, Kansas City, Mo.

FOR DEPENDABILITY—CHOOSE
CONTINENTAL RED SEAL POWER

Now Available with Built-in Generator for Lighting, etc. Series AU, 2, 2½, 3 hp illustrated.

Continental Motors Corporation
INDUSTRIAL AIR-COOLED ENGINE DIV.
12800 Kercheval Ave., Detroit 15, Mich.

FREE! GIANT CATALOG

Benrus
Bissell
Detecto
Ekco
Gilbert
Gruen
Ideal Toy

MAKE BIG MONEY IN YOUR SPARE TIME...

Selling name brand merchandise. We give you everything you need to get started in your own business FREE! Giant New 124 Page Color Catalog plus confidential dealers wholesale price list You buy at lowest wholesale prices All orders shipped immediately from our giant warehouse

WRITE TODAY

Our name does not appear anywhere in the Catalog.

Parker
Remington
Presto
Rival
Ronson
Sessions
Waring

THE FRALEIB COMPANY
39 Union Square, Dept PS New York 3, N. Y.

ART LEARN AT HOME!

Enjoy glamorous high-pay career or profitable hobby. Learn Commercial Art, Illustrating, Cartooning, Fashion Art, Lettering, T. V., etc. We train you at home, in spare time. Low cost, 22-pc. art outfit free of extra cost. **Write for FREE Book** describing easy method. No obligation. No salesman will call on you. **Washington School of Art, Studio 1511, Port Washington, N.Y.** (Estab. 1914)

Catalog of 3200 Novelties 10c

Send 10c for amazing catalog of novelties, live animals, scientific supplies, hobbies, funmakers, planes & boats, looms, magic tricks, joke articles, unusual seeds, gadget timesavers, cameras, optical goods, projectors, movies, lucky jewelry, religious novelties, disguises, musical instruments, stamps, coins, puzzles, fortune tellers, radios, auto & bike accessories, telescopes, magnifiers, compasses, banks, smokers' gadgets, artists' supplies, printing sets, engines, motors, shockers, knives, billfolds, fireworks, guns, rifles, sports, books, games, plants, etc. Send name, address & 10c to:
JOHNSON SMITH & CO., Dept. 434 Detroit 7, Michigan

—CHECK AND SEND NOW—

McKNIGHT'S up-to-date, easy-to-read, authentic

HOW TO DO IT BOOKS

World's most popular "How to" books. Approved by vocational instructors, schools & colleges. Complete step by step details. Jam-packed with illustrations.

- ☐ Woodworking
- ☐ Metalworking
- ☐ Welding
- ☐ Home Mechanics
- ☐ Electricity
- ☐ Crafts

McKNIGHT & McKNIGHT Publishing Company
Dept. 502, Bloomington, Ill.

NAME_____
ADDRESS_____
CITY_____ STATE_____

TELEPHONES

and ALL SUPPLIES

Room to room, house to garage, private telephone service.

HANDSET CRADLE TELEPHONES (2) Complete outfit with 100' wire, 2 dry cells, instructions. $14.95

WORM HARVESTER—Dan Mac Magneto — gathers fish-worms by electricity. Complete with instructions. $6.50

Illustrated booklet "AA-28" 10c

TELEPHONE REPAIR & SUPPLY CO. Dept. AA-29
1700 Lunt Ave., Chicago 26, Ill.

"I'll Show You How to Have Giant Strength, Health and Success"

Says:

Paul Anderson

THE WORLD'S STRONGEST MAN, GOLD MEDAL OLYMPIC CHAMPION, OFFICIAL WORLD RECORD HOLDER

MAIL COUPON for FREE Book

"I built myself up from skin and bones; almost died as a youth. The prayers of my parents and my own determination to gain strength pulled me through and led me to the discovery of the four great secrets of body building might.

"Let me show you how you, too, can have the body you want with full muscular development, giant strength, robust health and regularity, right weight, perfect poise and mental control. No obligation – learn how you can transform your life with my course and a few minutes each day. You can make a new man of yourself—build power, spring, endurance and coordination into all your muscles. My system improves your style and performance in any sport. You 'win friends and influence people' — both sexes, amazingly. Don't delay — act NOW!"

YOU TOO CAN WIN MEDALS & TROPHIES

"I have many medals and trophies won in National and World competitions in Russia, Germany and Australia. Let me fit you for weight lifting competition greatly growing in favor."

PAUL ANDERSON PS11
Toccoa, Ga.

Send me without obligation your fully illustrated book giving full details of "Easy Steps to Giant Strength." Check marks show the body I want.

- ☐ Muscular Development ☐ Poise
- ☐ More Weight ☐ Mental Control
- ☐ Less Weight ☐ Strength ☐ Health

*Name*_____ (Please Print)
*Address*_____
*City*_____ *Zone*_____ *State*_____

The funny hole in Mr. Cooper's building

MANY a New Yorker shook his head, and not a few snickered, when they saw the "hole" in Peter Cooper's new building.

But to the benign gentleman with the ruff of graying whiskers it was all so simple: Some day someone would perfect the passenger elevator.

The mere fact that there wasn't one in 1853 would mean little to a man who, with his own hands, had built and driven the first American locomotive. Whose money, and faith, were to help see the Atlantic Cable through all its disasters to final success. And who would "scheme out" a Panama Canal plan fourteen years before DeLesseps.

But Peter Cooper's belief in the future ran in a vein far deeper than simply the material. For his "building with a hole" was Cooper Union, the first privately-endowed tuition-free college in America. A place where young men and women of any race, faith, or political opinion could enjoy the education which he, himself, had been denied. Peter Cooper's dearest dream—which has continued to grow dynamically for nearly a century and today enriches America with thousands of creative thinkers, artists, and engineers.

There is plenty of Peter Cooper's confidence and foresight alive among Americans today. It is behind the wisdom with which more than 40,000,000 of us are making one of the soundest investments of our lives—in United States Savings Bonds. Through our banks and the Payroll Savings Plan where we work, we own and hold more than $41,000,000,000 worth of Series E and H Bonds. With our rate of interest—and the safety of our principal—guaranteed by the greatest nation on earth. You're welcome to share in this security. Why not begin today?

Now Savings Bonds are better than ever! Every Series E Bond purchased since February 1, 1957, pays 3¾% interest when held to maturity. It earns higher interest in the early years than ever before, and matures in only 8 years and 11 months. Hold your *old* E Bonds, too. They earn more as they get older.

SAFE AS AMERICA . . . U. S. SAVINGS BONDS

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

SUBMACHINE GUNS!

STEN $17.95

ORDER BY MAIL. $5 deposit for COD. Shipped FOB Los Angeles Calif. resid. add 4% state tax.

Collectors! The famous STEN GUN, British rapid fire submachine gun used by commandoes, airdropped to Maquis, used in ill-fated Rommel HQ raid. Cal. 9 MM Parabellum (Luger). Shipped to you complete with 32 rd. magazine: official British sling. Bores plugged in accord with Fed. Firearms laws on machine guns. (de-activated war trophies). Gun can cock and snap, has change lever switch for full and semi-auto fire. Design of mech. basic for collectors and designers. Easy assembly for study. No license required. Detailed Sten Ordnance Manual showing all parts, $1.00 postpaid. EXTRA MAGAZINES, $3.95 ea. MAG LOADERS $1.95 ea.

Cadmus Industries

52 Craft Bldg.
5880 Hollywood Blvd.,
Los Angeles 28, Calif.

MAKE A WATER LEVEL

FOR LAYING OUT FOUNDATIONS, FLOORS, DRAINS, ETC.

Reservoir feature gives you 100 ft. of leveling with only 50 ft. tube, and precise one-man operation. Clear tough vinyl tube, specially designed, .300" o.d. kinkproof, 50 ft. $4.95, 75 ft $6.95, check or M.O. ppd. C.O.D. postage added. Includes vial of color and complete instructions for making and using reservoir type level. Refund guaranteed.

HYDROLEVEL • 929 DeSoto Avenue, Ocean Springs, Miss.

3-PASS. SPORT CAR
Ideal 2nd Car or Sportabout. Fully Equipped. Write For Literature.

ESHELMAN TRACTORS

LOW AS $99

Plows-Cultivates-Saws
Cuts-Dozer-Harrows
Hauls - Snow Plows-
Rolls. Eshelman Tractors, Tillers, Riding Rotary Mowers for Better Lawns and Gardens. Advertised in GOOD HOUSEKEEPING. Thousands of satisfied users. Write for Free Literature.

Illus. MODEL $549.75

Dept. 281, ESHELMAN, Balto. 2, Md.

Shipping Points: BALTIMORE • CHICAGO • RENO

TV Famous Dan Lurie World's Champion Muscle Builder.

Ideal Christmas Gift

GUARANTEES TO BUILD YOUR MUSCLES FAST!

In just 6 weeks my amazing Body Mold course and famous adjustable barbells must give you bigger muscles, sensational power or money back. Get "revolutionary Body Mold" courses free with order. Lowest factory price.

DAN LURIE BARBELLS

50 LB. set 8.98 — 100 LB. set 14.98
150 LB. set 21.98 — 200 LB. set 27.98

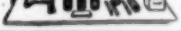
Extra wts. 14c per lb. 50% cash with order. Balance C.O.D. F.O.B. plant.

DAN LURIE BARBELL CO.
525-11 Bristol St. Dept. 770-L Bklyn 12, N.Y.

FREE! Send For New Sports & Health Catalog

make your own Gems 36.50 f.o.b.

The Gem Maker comes complete with all necessary equipment, including a super-charged diamond blade for sawing, and all the wheels for grinding, shaping and polishing; also complete instructions. The complete equipment as shown, less motor and belt for only $36.50, f.o.b., Burlington, Wisconsin. Write today for information and literature.



B&I MANUFACTURING CO.
Dept. 5, Burlington, Wis.

3 INCH 50, 105 and 310 POWER REFLECTING TELESCOPE $24.95 COMPLETE

PLUS 3 POWER FINDER SCOPE

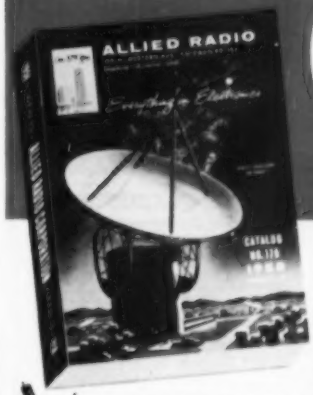
WITH 3 FT TRIPOD

SHIPPING WEIGHT 10 LBS.

A professional-performing instrument for serious minded Astronomers, Saturn's rings, Jupiter's satellites, moon's mountains and craters are but a few celestial wonders to be seen clearly and distinctly. Telescope is 38" bakelite tube mounted on rigid 3 ft. hardwood tripod with cast iron head. Has equatorial and altazimuth mount. All-machined polar and declination axes have tension screws on each. A 3" F-13 mirror aluminized and overcoated guaranteed to resolve to Dawes limit for its size. A 3X finder scope quickly locates target. This all-assembled telescope with 3 eyepieces, finder scope and tripod $24.95 FOB Mattituck. Sent express. Satisfaction guaranteed. Free Astro Book & Star Finder Dial.

SUFFOLK SCIENCE SERVICE, Dept. PS-11, MATTITUCK, N. Y.

free! ALLIED'S 1958 ELECTRONIC SUPPLY CATALOG



404 value-packed pages

Send for it!

SAVE on everything in electronics

EASY TERMS AVAILABLE

WORLD'S LARGEST STOCKS

Here's everything in Electronics for Experimenters, Builders, Amateurs, Servicemen, Engineers and Hi-Fi Hobbyists:

- Amazing Build-Your-Own KNIGHT-KITS
- Hi-Fi Music Systems & Components
- Recorders & Phono Equipment
- TV Tubes, Antennas, Accessories
- Public Address Systems
- Amateur Station Equipment
- Latest Test Instruments
- Industrial Electronic Supplies
- Parts, Tubes, Transistors, Tools and Books

SAVE on everything in Electronics—get fast, dependable service—send today for your FREE 1958 ALLIED Catalog.

Everything in Electronics From One Reliable Source

our 37th year

Send for FREE Catalog

ALLIED RADIO

ALLIED RADIO CORP., Dept. 7-L7
100 N. Western Ave., Chicago 80, Ill.

☐ Rush FREE 1958 ALLIED 404-Page Catalog

Name _____

Address _____

City _____ *Zone* _____ *State* _____

PREPARE FOR THE BEST JOBS IN INDUSTRY

Shortages of Draftsmen, Designers, Tool Engineers, Machinists, Air Conditioning Technicians are so widespread that you can pick a highly paid key job and look forward to Achievement and Security.

TRAIN AT HOME in Your Spare Time or at ALLIED INSTITUTE in Chicago

- Drafting—ALL BRANCHES
- Tool & Die Designing
- Machine Designing
- Tool Engineering
- Mech. Engineering
- Machinist—Tool & Die
- Air Conditioning
  Heat & Refrigeration

MORE JOBS THAN GRADUATES

You can begin your training in Short Courses at home or at Allied Institute, and continue progressively toward an Engineering Degree in 31 months. Allied is approved by Industry, National Home Study Council, Dept. of Education, Office of Public Instruction, State of Illinois, U. S. Dept. of Justice.

SEND FOR FREE BOOKS

ALLIED SCHOOL OF MECHANICAL TRADES
1338-42 South Michigan Ave., Dept. PS-117, Chicago 5, Ill.

Send me without obligation information on your courses:

☐ DRAFTING—ALL BRANCHES ☐ TOOL ENGINEERING
☐ TOOL & DIE DESIGNING ☐ MECH. ENGINEERING
☐ MACHINE DESIGNING ☐ MACHINIST—TOOL & DIE
☐ AIR CONDITIONING—HEAT & REFRIGERATION
☐ HOME STUDY ☐ RESIDENT ☐ VETERAN ☐ NONVETERAN

NAME _____
ADDRESS _____
CITY _____ COUNTY _____ STATE _____

NEVER AT THIS LOW PRICE!

GENUINE 135-POWER ACHROMATIC TELESCOPE

with Achromatic Lens and 4-POWER FINDER attached

ONLY $18.95 PREPAID

EXTRA BONUS GIFTS:
- 273 page book, "Handbook of the Heavens"
- Magic Star Finder Dial
- 220X & 400X Eyepiece lenses

5 Magnifications 18X—35X—65X—85X—135X
Brings the Moon, Planets, Stars, People
135 times Closer, Clearer, Sharper

Never before has an ACHROMATIC 135X telescope with range finder and tripod sold for anywhere near this amazing low price! Now you can not only explore the heavens and bring the moon, planets, stars 135 times closer, but you can observe all distant objects, people, ships too, because all pictures are erect, not upside down as in all astronomical telescopes. The kind of needle-sharp color-free viewing only a genuine achromatic lens can bring you. Ready for immediate use. 5 precision lenses bring you viewing at 18X—35X—65X—85X—135X. Tubes extend to 43" made of bakelite, finished in camera bellows black, trimmed with gleaming brass. 4 power finder scope (30mm Lens) mounted on main tube is feature usually found on more expensive telescopes—brings difficult objects on target before observing with main scope. For extra stability 5 ft. hardwood folding tripod is equipped with heavy cast iron head fitted with Criterion's famous 360 degree all aluminum mount that locks instantly in any position. Obtainable only from Criterion Co. shipped prepaid. 4 famous gifts—273 page book "Handbook of the Heavens," Magic star finder dial that aids in locating stars ANYWHERE at ANYTIME of the year. 220X & 400X eyepiece lenses included free for experiments. You must be completely satisfied with this super offer or your money back in full. Shipped Complete, nothing else to buy at amazingly low price of **$18.95.** Without tripod **$14.95.**

Send Cash, Check, or Money Order today
Dept. PST-21, CRITERION CO., 331 Church St., Hartford, Conn.

Proven formula for wealth!

Satisfaction Guaranteed

This remarkable, to-the-point study shows you precisely how to create riches through positive action . . how to make thinking pay profits. The wealth of America has been accumulated by a small percentage of the people who, knowingly or unknowingly, have followed this formula. Not magical—not theoretical—this is a system YOU can apply —IF YOU WANT TO. You will even be able to measure which of your friends is bound to succeed. If you follow this plan yourself, we GUARANTEE you success. Your desires can be turned to reality. Advance yourself now, whatever your present position. This book is worth thousands of dollars to anyone who really wants to be wealthy, but to the person who doesn't care, it's not worth a penny. To order send $2.00
DUNN-HALL RESEARCH, Box 51-Z, Alhambra, California

GROW MINIATURE TREES
in your home..$$ PROFITS!

New Fascinating HOBBY or HOME-BUSINESS OPPORTUNITY! Learn little-known techniques for growing living "Ming" Trees only inches high. Beautiful Elm, Cherry, Orange, Cypress, Peach, etc., that BLOSSOM AND BEAR TINY TASTY FRUIT. Help Fill demand for these sensational dwarfed Trees. FREE ILLUSTRATED DETAILS. Write: **MINIATURE TREE NURSERIES, Dept. 8-11** (Home-Growers Division) Gardena, Calif.

ANIMATED DISPLAY

$3.00 ea.

This Christmas decorate your roof or lawn with a **moving** Santa Claus and reindeer. New full size blueprints show you how to cut, assemble and paint. Display measures over 16 ft. when completed. Small inexpensive motor or Bar-B-Q motor makes Santa's arm wave and deer's legs run. Complete blueprints only **$3.00** postpaid. Send cash, check or M.O.
ROYAL SIGN & DISPLAY CO.
9278 Kewen Ave. San Valley 11, Calif.

FREE! New Collection of Foreign Stamps Plus Free Membership in TRADE STAMP CLUB

A new exciting way to give your stamp collection a wonderful boost! Trade your "extras" for hundreds of valuable foreign stamps. All different. You may gain just the stamp you're hunting for. Write for Trade Book & Bonus Stamp Packet, both free. Membership free. Send name, address, 25c in coin (to cover postage & handling) to:
TRADE STAMP CLUB Dept. 1-K
4208 Kennison Ave. Baltimore 15, Md.

WE HAVE A FEW COPIES LEFT

The ALL-NEW 5th Edition of this very popular Handbook is jam-packed with EXCITING ARTICLES, ACTION PICTURES, PLANS, SPECIFICATIONS, ENGINE INFORMATION, TRACK and RACING DATA, HOW TO BUILD A TRACK, ALL RULES and REGULATIONS, etc. for ¼ MIDGETS, MICRO-MIDGETS, ¾ MIDGETS, 500 cc CARS, and FULL-SIZED MIDGETS.

You've never seen a book filled with so much ACTION, EXCITEMENT, and VITAL INFORMATION. It also serves as a COMPLETE CATALOG telling where to buy ENGINES, WHEELS, INDIVIDUAL PARTS, SUPPLIES, and COMPLETE CARS.

WHILE OUR SUPPLY LASTS

only $1.00

MICRO MIDGET RACING is America's most exciting sport. Now anyone from 18 to 60 can own a real racing car and have all the FUN, THRILLS, and EXCITEMENT of SPEEDWAY RACING. Why don't you too get in on the fun and good times that Micro drivers have.

SEND 25c FOR ILLUSTRATED LITERATURE DESCRIBING THE ALL-NEW COMET MICRO MIDGET

COMET MANUFACTURING CORPORATION, Dept. PS-11, Box 74397, Los Angeles 4, Calif.

LEARN MEAT CUTTING AT NATIONAL

Pay After Graduation

The steady dependable trade of Meat Cutting taught easily in 8 short weeks. YOU LEARN BY DOING under actual meat market conditions in big modern school at Toledo.

For beginners or men with experience. Get a profitable store of your own. Remember, PEOPLE MUST EAT! Big pay jobs. Free employment help. Thousands of successful graduates.

Buying, cutting, percentage, pricing, advertising, selling, etc. A complete retail meat education. National School established 35 years. Get National training NOW. Pay your tuition in easy weekly payments after you graduate. Send coupon for FREE 52 page school catalog — TODAY. G.I. approved.

National School of Meat Cutting, Inc.
Dept. S1-X, Toledo 4, Ohio

Send me your FREE school catalog on National Training at Toledo in Meat Cutting, Meat Merchandising and Self Service Meats. No obligation. No salesman will call.

Name..... Age.....

Address.....

City..... State.....

Approved for training Korean Veterans

Helps You Overcome FALSE TEETH Looseness and Worry

No longer be annoyed or feel ill-at-ease because of loose, wobbly false teeth. FASTEETH, an improved **alkaline** (non-acid) powder, sprinkled on your plates holds them firmer so they feel more comfortable. Avoid embarrassment caused by loose plates. Get FASTEETH **at any drug counter.**

1958 CATALOG BOAT KITS WOOD and FIBERGLAS

EASY TO BUILD - DESIGNED for professional results by the amateur. World's largest selection of top performance, latest design, proms, skiffs, racers, runabouts, sailing boats, cruisers. 8 to 20 ft. Mahogany decks, frames. FREE FREIGHT. SEND FOR FREE CATALOG

Boat Plans-Patterns-Frame Kits Includes fiberglas paints, accessories

Build over 50 modern boats from large scale plans, available with FULL-SIZE patterns, new PRE-FAB frame kits! All types: proms to cruisers, 6 to 25 ft. Best buy for Ameteurs! SEND 10¢ for CATALOG.

Craig Craft Tonawanda, N. Y.

ANSEN AUTOMOTIVE

NEW! ILLUSTRATED POWER & SPEED **CATALOG!**

OVER 500 PICTURES - TUNING TIPS - COMPLETE DATA ON ALL LATEST CARS!

WRITE TODAY! 75¢

6317 S. Normandie
Los Angeles 44, Calif. Dept. PS-11

Silence PING

USE SAE 10W-30

KENDALL

SUPERB MOTOR OIL

Get into.. PLASTIC LAMINATING AT HOME!

THIS MAN . . . is taking out of the machine a Plastic Sealing Job — ordered by mail — only 11¢ in material cost brings back $2.58 in cash by mail. Capacity of machine: **$25.00 profit per hour of operation.**

Get ORDERS and CASH from your mailman—do work in SPARE TIME at home —or expand into FULL TIME business.

Send coupon for Free facts about the newest and most fascinating of all home operated businesses. For the first time a simplified machine brings the fabulous profits of **Plastic Sealing** and **Plastic Laminating** within the reach of the small operator. Anyone can learn to operate the machine with a few minutes practice—then with our **Magic Mail Plan** can get mail orders pouring in daily with cash in every envelope. ***No canvassing—no selling.*** We even supply the circulars you mail to bring back cash and orders. Don't waste a minute. Rush your name. We'll send you FREE and postpaid, pictures, prices, details, and all the facts you need to start. Mail coupon or send name on postcard. No charge.

Make $20 to $30 a Day by.. MAGIC MAIL PLAN!

Warner Electric Co., 1512 Jarvis Av., L-3-M, Dept. Chicago 26, Ill

Make Thousands of Beautiful Art Creations

COSTUME JEWELRY • CIGARETTE BOXES
TRAYS • CANDLESTICKS • COASTERS
LAMP BASES • BOOK ENDS...ALL IN SPARKLING COLORED PLASTIC

WARNER ELECTRIC CO., 1512 Jarvis Av.
Dept. L-3-M, Chicago 26, Ill.

At no cost to me, please rush complete details postage prepaid. I am under no obligation.

Name.....

Address.....

City..... *Zone*..... *State*.....

TRAINED MEN NEEDED!

IN INDUSTRY—ARMED FORCES

BIG PAY!—GOOD FUTURE!

☐ DIESEL ☐ ELECTRONICS

☐ AUTO ☐ AUTOMATION

NEVER BEFORE has the opportunity been so good for the properly trained mechanic and technician to step into BIG PAY POSITIONS with rapid advancement and future security virtually assured.

YOUR SUCCESS depends on the quality of training you receive . . . and the reputation of the school you attend.

YOUR GUARANTEE we are giving the best in mechanical and technical training is proved by the fact . . . High pay jobs in Industry, and ratings in the Armed Forces now waiting for our graduates.

RESIDENT SHOP TRAINING is easier and costs less than you may think! We provide you with housing and part-time jobs while in school, plus free nation-wide placement service for graduates.

Check subject above in which you are interested and mail for

Your Future in ELECTRONICS AND AUTOMATION

FREE BOOKLET

BAILEY
Technical Schools
Veteran Approved
1650 S. Grand, St. Louis 4, Mo.

Your Future in DIESEL and AUTO MECHANICS

Name_____ Age_____
Street_____
Town_____ Zone_____ State_____

Superior's New Model 70 UTILITY TESTER

FOR REPAIRING ALL ELECTRICAL APPLIANCES MOTORS • AUTOMOBILES • TV TUBES

As an electrical trouble shooter the Model 70:

- Measures A.C. and D.C. Voltages, A.C. and D.C. Current, Resistances, Leakage, etc.
- Will measure current consumption *while the appliance under test is in operation.*
- Incorporates a sensitive direct-reading resistance range which will measure all resistances commonly used in electrical appliances, motors, etc.
- Leakage detecting circuit will indicate continuity from zero ohms to 5 megohms (5,000,000 ohms).
- Will test toasters, irons, Broilers, Heating Pads, Clocks, Fans, Vacuum Cleaners, Refrigerators, Lamps, Fluorescents, Fans, Switches, Thermostats, etc.
- Will test all TV tubes for open filaments, inter-element shorts, burned out tubes, etc.

As an Automotive Tester the Model 70 will test:

• Both 6 Volt and 12 Volt Storage Batteries • Generators • Starters • Distributors • Ignition Coils • Regulators • Relays • Circuit Breakers • Cigarette Lighters • Stop Lights • Condensers • Directional Signal Systems • All Lamps and Bulbs • Fuses • Heating Systems • Horns • Also will locate poor grounds, breaks in wiring, poor connections, etc.

Model 70 comes complete with 64 page book written in plain easy-to-understand language. Explains laws of electricity, how to proceed with repairs of appliances and automobile circuits, how to test TV tubes, etc. Only **15.85**

SHIPPED ON APPROVAL

NO MONEY WITH ORDER—NO C.O.D.

Try it for 10 days before you buy. If completely satisfied then send $9.95 and pay balance at rate of $4.00 per month for 3 months — No Interest or Finance Charges Added! If not completely satisfied, return to us, no explanation necessary.

MOSS ELECTRONIC DIST. CO., INC.
Dept. D-404, 3840 Tenth Ave., New York 34, N.Y.

Please rush me one Model 70. If satisfactory I agree to pay $1.85 within 10 days and balance at rate of $4 per month until total price of $15.85 plus postage is paid. If not satisfactory, I may return for cancellation of account.

Name_____
Address_____
City_____ Zone____ State_____

AMAZING! SAVE UP TO 70%

ABSOLUTELY NEW, not used or recaps
LIFETIME GUARANTEE

& Tube Free

NEW TIRES

670-15	$7.95	600-16(6)	$8.95	825-20	$23.25	White Walls $1.00 extra
710-15	8.45	650-16(6)	10.25	900-20	24.25	
760-15	8.95	750-16	12.60	1000-20	27.50	
700-15(6)	12.00	700-20	16.50	1100-20	28.50	
750-15(6)	12.50	750-20(8)	18.50	1000-22	27.50	
700-17	15.50	750-20(10)	21.50			
750-14	$9.25					
800-14	9.75					

Dealers demand trade-ins & tax on new tires. WE DON'T. More $ Saved! Read all ADS carefully. Don't confuse "USED" tires with our "NEW" TIRES. Thousands of these fresh standard brand rejects are in use daily.

SAVE $3. to $33. on SNOW TIRES

GOODYEAR SUBURBANITE Silent Type & others

All types, factory Mud-Grip Retreaded & slightly used. No trade-in needed. SPECIAL 12 Mo. GUARANTEE (Tube Free) $6.22 any car

White Walls $2. extra.

Also our PREMIUM GOODYEAR Full tread Guar. 3 Full Winters $9.95 any car TUBE FREE

MARVIN BLATT 605 Spring Garden St. Philadelphia, Pa.

Send Check or M.O. & this Ad for fast shipment, FOB Phila. I personally select your tires as if my future depended on it. BLATT NAME famous for 42 years in TIRES.

BIG NEW WHOLESALE CATALOG FREE!

WRITE TODAY FOR FREE CATALOG SEND POSTCARD

***NOW!* Save Up to 50% on Nationally Advertised Gifts**

Use this big, new FREE CATALOG to buy all kinds of gifts and merchandise for yourself, family, friends, neighbors. Terrific saving on big-name items. Also, make money spare time taking orders from others!

EVERGREEN STUDIOS
Dept. 57, Box 846 Chicago 42, Ill.

GOVERNMENT 40 ACRE

OIL LEASE $100

Act of Congress gives citizens equal rights with Oil Co's. to obtain Govt. leases. You do no drilling, yet may share in fortunes made from oil on public lands. (Payments if desired) Licensed & Bonded Oil Brokers. Free Information & Maps of booming areas. Write:

NORTH AMERICAN OIL SURVEYS
8272-AH Sunset Blvd., Los Angeles 46, Calif.

WE PAY $3.50 lb. dried

GROW MUSHROOMS. Cellar, shed and outdoors. Spare or full time, year round. We have over 25,000 customers. FREE BOOK. Washington Mushroom Ind., Dept. 62, 2954 Admiral Way, Seattle, Wash.

BARBELLS

Build lasting strength & health with Southern's famous barbell sets and instructions.

135 LB. STANDARD SET $18.25 F.O.B. Richmond
Extra Weights 14c Per Lb.

Large selection of barbell sets, home gym equipment, professional body building gym equipment, flat type gym weights.

SOUTHERN BARBELL MFG. CO. P.O. Box 156
or Mapleshade Lane & Saunders Ave., Richmond, Va.

When Writing to Advertisers Please Mention Popular Science

The 14' STARFISH . . . Now you can OWN a $1,100 registered Planing Hull Class SAIL BOAT for only $525, complete. Freight prepaid. It's constructed of "Harborite" Plastic covered plywood, with Dacron Sails and stainless steel and chrome hardware throughout. So EASY to assemble . . . Yards of the work is done in our plant. Just put it together and you're ready to SAIL! Owners claim speeds up to 16 knots. It's the ULTIMATE in a family racing sailboat.

• HULL KIT • HARDWARE & RIGGING KIT • SAIL KIT • ONLY $175 each, freight collect. COMPLETE KIT $525, FREIGHT PREPAID.

Assembled at our plant, complete, ready to sail, $1,100 freight prepaid.

PORT MARINE, INC.
P.O. Box 704-A, NEWPORT BEACH, CALIF.

NEW MODEL 400 SIMPLEX LAWNMOWER SHARPENER

Many Exclusive Features

The NEW SIMPLEX is the fastest, most accurate straight-line lawnmower grinder ever built . . . gives you all these advantages:

- Grinds all mowers—reel type, rotary, hand or power, any size.
- No dis-assembly needed, gas and oil remain in engine, support bar retains.
- Grinding head feeds both horizontally and vertically, turns 90° for bed knives.
- Fast, positive adjustments, 4-point support on steel base with leveling screws.
- Rugged, long life construction and many other features.

Get the facts on the new SIMPLEX 400 before you buy any sharpener.

Send for free brochure today

The Fate-Root-Heath Company
Dept. PS-11• Plymouth, Ohio

Official SEA, AIR & LAND PHOTOS

SPECIAL INTRODUCTORY OFFER!

1. 4-3½x5 Carrier, Subs and Battleships
2. 4-3½x5 World War II planes
3. 4-3½x5 photos, world's fastest jets
4. 1-8x10 photo, Forrestal Carrier
5. 1-8x10 photo USN F11F-1 Tiger

Only 25c a set. Send $1 for all 5. ($2 value)

Illust. CAT. with order. Money back guar.

U. S. SEA & AIR PHOTOS

DEPT SP BOX 75084
LOS ANGELES 5, CALIFORNIA

SAV-A-POCKET

THE COLLECTORS PAL

Saves Trousers and Cleaning Cost

Just run belt through top of shield and insert the pocket into trouser pocket. Allows easy changing from one trouser to another. Made of NYLON and VINYL. Sold by mail order only.

Price $1.95 Plus 5c Postage
Be sure to state Right or Left

DUCLAIR MFG. & DISTRIBUTING CO.
P.O. Box # 873, Atlanta, Ga.

GETTING UP NIGHTS

If worried by "Bladder Weakness" (Getting Up Nights or Bed Wetting, too frequent, burning or itching urination) or Strong Smelling, Cloudy Urine, due to common Kidney and Bladder Irritations, try CYSTEX for quick help. 30 years use prove safety for young and old. Ask druggist for CYSTEX under money-back guarantee. See how fast you improve.

This CHRISTMAS

Child's REAL Auto

Lots of fun but complete safety when children drive the new HACKNEY auto! Speeds as low as 2 MPH for little folks. 2-HP gas engine gives up to 35 miles on single filling of tank. Comfortable, Safe, Sturdy! Easy to drive. DEALER INQUIRIES INVITED. For full information write—

FABRISTEEL CORPORATION
High Point Road Greensboro, N. C.

AT LAST

BILL-PASS
Pat. No. 2802502

A flip of a flap and your money or your cards are at your disposal. Holds in full view 12 cards or photos. Slim and compact enough to fit in the palm of your hand. In lifetime lasting black or brown top grain cowhide.
The quality gift
Check, cash or money order
State black or brown

at only $1.98

S. SEAMON & CO., 1388 W. 6th St., Brooklyn, N. Y.

Dr. Grabow
PRE-SMOKED PIPES

Cool, sweet and mild from the first puff. No breaking-in because they're mechanically pre-smoked.

Imported briar

Starfire
$3.50

other Dr. Grabows from $1.50 to $10

trademark of quality

For informative booklet write:
Dr. Grabow Pipe Co., Greensboro, N.C.

FREE PLAN
tells how to start your own business
FILING SAWS

Here is a steady repeat CASH business you can start in your own basement or garage in your spare time and make up to $3 or $5 an hour. You can file band, band and cross-cut circular saws on the Foley Saw Filer. No eye-strain—no experience needed. "The first saw I sharpened with my Foley Filer came out 100%"—writes Clarence E. Parsons.

Every saw you sharpen with the Foley Saw Filer brings you more customers. "I rented a two-car garage and have all the work I can do" —Charles H. Smith.

FREE BOOK

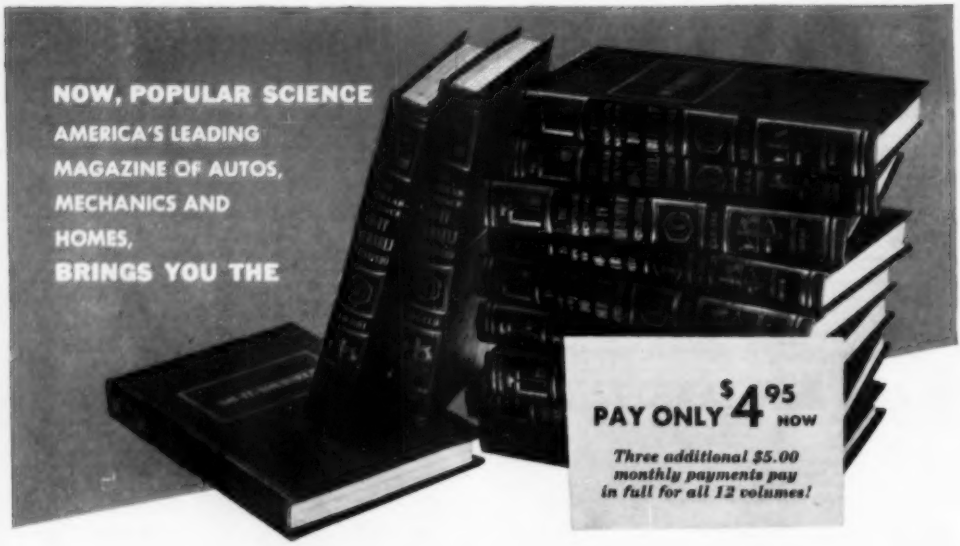
"Money Making Facts" shows just how you can start at home in spare time, with small investment, no overhead—and develop into a full-time repair shop. Send coupon today—no salesman will call.

Send Coupon for Free Book

FOLEY MFG. CO., 1119-7 Foley Bldg.
Minneapolis 18, Minn.
Send me free book "Money Making Facts"

Name.....

Address.....



POPULAR SCIENCE

DO-IT-YOURSELF ENCYCLOPEDIA

in 12 picture-packed volumes

Just a Few of the More Than 1000 Home Repairs and Improvements, Shop Projects and Tips, in the POPULAR SCIENCE DO-IT-YOURSELF ENCYCLOPEDIA:

built in units for every room • how to make awnings • car care • drainage system repair • electrical repairs • how to finish wood • garden and lawn care • hi-fi techniques • how to install intercom systems • how to make wood joints • how to modernize your kitchen • how to install modern home lighting systems • electric motor repairs • one-evening projects • planning a patio • roofing repairs and maintenance • sanding tips • toilet repairs • wallpapering • painting • baby furniture • modernizing your bathroom • how to work with concrete • power tools and accessories • floor repair and new floor construction • garden pools • modern heating systems • how to buy lumber • how to make outdoor furniture

All the information you'll ever need for the repair, improvement and maintenance of your house, your car, your lawn and garden, your garage and just about anything you own—right at your fingertips in this magnificent 12-volume set.

The 12-volume POPULAR SCIENCE DO-IT-YOURSELF ENCYCLOPEDIA brings you over 3000 pages, with more than 6000 photos, plans and diagrams that cover every subject of interest to a handyman and homeowner. You'll find repair and improvement data for every room in the house. Information on wiring, plumbing, painting, insulating, papering, decorating, plastering. Pictures and descriptions of nearly every hand and power tool, every handyman's gadget or device. Shows how to use every material from asphalt shingles to upholstery webbing. Brings you projects ranging from an ash tray to a built-in laundry room.

Best of all, only $4.95 puts all 12 volumes right in your hands for *free examination.* Use it for 10 days. Then, if you're not convinced that this set will save you 10 times its modest price, return it and we'll refund every cent you paid. Otherwise, you send only $5.00 a month until the low price of $19.95 is paid.

Rush the coupon below with only $4.95 TODAY. We'll send your complete set promptly and *postpaid!* But you must ACT FAST. Limited quantity available.

MAIL THIS COUPON NOW

POPULAR SCIENCE MONTHLY, 353 4th Ave., N. Y. 10, N. Y.

Gentlemen:

I'm enclosing $4.95. Please rush my 12-volume POPULAR SCIENCE DO-IT-YOURSELF ENCYCLOPEDIA for free inspection. If I keep it, I will send three additional monthly payments of $5.00 each. If dissatisfied, I'll return the set for full refund.

(If you prefer to send payment now — thus saving us billing expense — check here ☐ and enclose only $18.95 in full payment. You save $1.00. Same refund guarantee.)

NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Avoid Post Office delay. Include zone number, if any. PS1157

WORLD'S GREATEST

CLASSIFIED

OPPORTUNITIES

Here are hundreds of opportunities offered especially to the readers of Popular Science Monthly. Read them. Answer them! You can make and save money.

SAVE MONEY

POPULAR SCIENCE MONTHLY—353 FOURTH AVE.—NEW YORK CITY 10

Classified Ads only $1.00 per word insertion, payable in advance. Minimum ad 10 words. To be included in January issue, copy should be in our office by November 25. No cancellations accepted after November 15. Address orders to O. K. Kelly, Classified Adv. Mgr.

1 AUTOMOBILES & MIDGET CARS

OLD copies of Popular Science wanted—any issue from period 1890 to 1915. Condition not too important provided books are complete with no pages removed. Write to Box No. 308, Tuckahoe, New York.

BOYS' Power-Driven Auto. Build Your Own. Plans 35c. B.M. Sypher Company, Sta. F, Toledo, Ohio.

CROSLEY And Foreign Car Owners Catalogues Available Parts Discount. Box 7, Elmont, New York.

HUNDREDS of automobile catalogs—old, new and foreign; dealer books, glossy photographs, shop manuals; free motor magazines listed by non-profit club. Write to get on free mailing list. Auto Maniacs, Inc., Stockbridge, Michigan.

SMOOTH trader? Read "How to Skin a Used Car Dealer" $1 from Bobalinks Publishers, 2611-30th, Lubbock, Texas.

2 AUTO SUPPLIES & EQUIPMENT

SAVE money on Jeep and army truck parts. Large inventory. Catalogs for Jeep and G.M.C. owners. American Auto Parts Co., 1830 Locust, Kansas City, Missouri.

AUTO Accessory and Parts Catalog, 1957 edition—all new! 228 pages. Save up to 50%—75,000 items, including Hollywood accessories, hi-speed equipment, rebuilt engines, all parts and accessories for all cars and trucks! Hard-to-get parts! Send 25c (refundable). J. C. Whitney, 1919 PS Archer, Chicago 16, Illinois.

DRIVE over alignment gauge. Smaller, faster, outperforms. Free data, free trial. $27.48. Align-A-Matic, 62H Gaston Street, W. Orange, New Jersey.

OFFICIAL U. S. Taxpayer—bumper or windshield sticker — fluorescent colors, $1.00. Address: Taxpayer, 1436 Bellaire Drive, Colorado Springs, Colorado.

ELIMINATE Hydraulic Valve Lifter Noise Forever. Buick 49—53, $11.70. Chev. PowerGlide $10.80. Easy to Follow Instructions with each Kit. Send Check for Prepaid Shipment. Val-Vee Engineering Co., P.O. Box 61121, Los Angeles, Calif.

ASSORTED Auto Accessories value $20—only $10 plus postage. The A. B. Sales Co., Derby, Kansas.

TAPPET noises in Mercurys, Fords, Chevrolets, stopped with our silencers. Kaye Products, 2067 South Layton Blvd., Milwaukee 15, Wisconsin.

NEW—Metal Alloy Prevents Corrosion On Battery Terminals And Case 2 Years Guaranteed 98c Set. Dealers Wanted. Central Mach. Wks., 315 3rd, Sioux City, Iowa.

PUT Leap In Your Jeep, Henry-J, or Kaiser. V-8 Power. See Jeep Owners Ad, Page 85.

ICE Grip makes rubber tires and footwear stick to icy roads for safe driving and walking. Big profits. Sample Winter's supply 10 tablets $1.00 prepaid. Ice Grip, P.O. Box 1073, Spokane 10, Washington.

SCOTCHLITE delineator with post, for drives, walks. Reflects at night. $3.00. Leco, Box 395, Decatur, Georgia.

USE THIS HANDY INDEX TO FIND WHAT YOU WANT

Advertising, Agencies for Advertisers ... 53
Agents Wanted ... 43
Air Conditioning ... 7A
Antiques, Relics & Indian Goods ... 29
Artists Supplies ... 76
Authors Service ... 52
Auto Supplies & Equipment ... 2
Auto Trailers ... 3
Automobiles & Midget Cars ... 1
Aviation ... 5
Batteries, Generators, Etc. ... 6
Boats, Outboard Motors ... 11
Body-Building Courses, Jiu Jitsu, Etc. ... 12
Books & Magazines ... 23
Build It Yourself ... 66
Business Opportunities ... 37
Business Service, Information, Name Lists ... 50
Buy It Wholesale ... 38A
Cameras, Photo Supplies ... 34
Camping Equipment & Tents ... 10
Cartooning, Sign Painting, Chalk Talks ... 54
Chemistry & Physics ... 41
Coins & Currency ... 26
Color Photo Finishing ... 32A
Contests ... 46
Detectives ... 47
Dogs, Birds, Hamsters & Pets ... 17
Earthworms ... 18
Educational & Instruction ... 45
Electrical Supplies & Equipment ... 7
Enamels, Paints & Varnishes ... 64A
Engines, Motors, Etc. ... 10
Farms, Other Real Estate ... 19
Field Glasses, Telescopes ... 14
For Inventors ... 60
For Sale Miscellaneous ... 71
For the Home ... 69
Formulas, Plans, Etc. ... 39
Games & Entertainment ... 24A
Geiger Counters, Treasure Finders ... 77
Help Wanted Reports ... 42
High-grade Salesmen ... 44
Hobbies, Collections ... 31
Home Craftsman ... 65
Hypnotism ... 24
Inventions Wanted ... 61
Language Outfits ... 48
Machinery, Tool Supplies, Etc. ... 9
Magic Tricks, Puzzles, Etc. ... 25
Manufacturing ... 63
Minerals & Precious Stones ... 30
Miscellaneous ... 79
Models, Model Supplies ... 64
Moneymaking Opportunities ... 38
Motion Pictures, Slides, Sound Equip. ... 33
Motorcycles, Bicycles & Supplies ... 4
Music, Song Writers & Records ... 35
Of Interest To Women ... 70
Old Gold, Jewelry, Watches ... 67
Old Stamps Wanted ... 27
Patent Attorneys ... 59
Patents For Sale ... 62
Personal ... 80
Photo Finishing, Photocopies, Etc. ... 32
Plastics ... 40
Plays, Stories, Etc. ... 49
Poultry & Supplies ... 21
Printing, Multigraphing, Etc. ... 57
Printing Outfits, Supplies ... 58
Profitable Occupations ... 22
Radio, TV, Supplies & Equipment ... 36
Razor Blades, Shavers ... 74
Rubber Stamps & Office Supplies ... 56
Special Services ... 51
Sporting Goods, Guns, Fishing Tackle, Etc. ... 15
Stamp Collecting ... 28
Tattooing Supplies ... 75
Tobacco & Pipes ... 68
Trees, Shrubs, Roots & Herbs ... 20
Trigonometers ... 9A
Typewriters & Office Machines ... 55
Wanted to Buy ... 72
Watch Repairing ... 78
Wearing Apparel ... 73
Welding, Soldering ... 8

CAR Bed Conversion Kit with complete instructions now available. Works on 2 or 4-door Sedans, Club Coupes, Station Wagons and Convertibles. Convert your car seat into a double or single bed when needed. We manufacture custom made car screens for all makes and model cars. Also "Sportsman DeLite" Camping Trailers with optional Boat Carrier and 12 and 14 foot boats. For further information write Car Bed Manufacturing Co., Dept. 5, P.O. Box 211, Panama City, Florida. Dealer Inquiries Invited.

CHROME-Plating (do-it-yourself) complete kit $3.98 postpaid anywhere. Guaranteed. Fairmont Chemical Company, East Syracuse, New York.

$10.00 BOOSTER cable sets—start cars, trucks, boats, etc. 6 & 12 volt. Only $5.00 set. No C.O.D. Ett Sales, 5229 Grove, Skokie, Ill.

FREE Giant 1958 Parts Catalog. Thousands Scarce Accessories Stores Don't Have — Gadgets, Custom Equipment. Send 25c Postage (Refundable). Newhouse Automotive Industries, 5805-PS Beverly, Los Angeles 22, Calif.

CHROMIUM Shine, imported from England, cleans, polishes, preserves shine. Removes Rust. $2 large bottle postpaid. Cloths Free with each order. Foreign Products Corporation, 21 Washington St., West Orange, N. J. Satisfaction Guaranteed.

TOP gasoline mileage. "Vacu-Matic" Unit. Write. Argeroplos, Skaggs Island Sonoma, California.

IMPORTED English Chamois 38x27 $4.95. Emil Thuriot, 2202 Russet St., Racine 1, Wisc.

MOTOR Overhaul. Stop Oil Pumping. Send name. Details. Taylor, 4832 Lincoln, Chicago 25, Illinois.

RING-Valve Job while you drive, $6.00. World's only product of its kind. Safe! Proven! Guaranteed! Free details. Motaloy, Grantham 27, Pennsylvania.

ADD miles to your gasoline dollars with Leonard Triple Electrode Spark Plugs. $1.25 each. Free details. Clark, 5641 Magnolia, Chicago.

BUILD Your Own Supercharger—Complete Plans And Instructions. $1.00. Alanne Products, Box 135-A, Watertown, Conn.

3 AUTO TRAILERS

UTILITY Trailers—small, two-wheeled, cost Government $180.00 each. Our price—two for $79.50. Send for complete literature. Contractors Surplus Company, Williamstown, Mass.

BUILD Expanding eight foot trailer. Accommodates five. Literature 10c. Framar Company, Wilmington, Massachusetts.

4 MOTORCYCLES, BICYCLES AND SUPPLIES

RECONDITIONED Motorcycles and motors. Chromium accessories. Complete stock Indian parts. Expert rebuilding. Fast service. Indian Motorcycle Sales, Kansas City 27, Missouri.

POPULAR SCIENCE OPPORTUNITIES

1953 CUSHMAN $15, Midget car $25. Micromidget $65, less motors. Motors $3 up. Evinrude outboard $10, Whizzer $7.50, (Mail order only). Send 25c (35c for First Class Mailing) for new 32-page Directory-Catalogue Number Eighty listing these and hundreds of other bargains in new and used motorscooters, midget cars, home-builders parts, plans, etc. Midget Motors Directory, Athens, Ohio.

BANKRUPT Motorcycle Bargains at Giveaway Prices. Catalog Bulletin 25c. Bunico, 146-Bk, Covington, Virginia.

5 AVIATION

LEARN Flying. No money down. Pay as you fly. For information send $1.00. Dasher, Box 9216, Tampa 4, Florida.

COMPLETE Aviation Correspondence Courses for all CAA Ratings. Write Fielding Aviation Correspondence School, 1803 Chuli Nene, Tallahassee, Florida.

AVIATION Surplus Bargain Catalog. One Dime. Box 22PS10, Thomasville, Penn.

SMALL Helicopters Theory and Guide Manual. Drawings, Construction Data, $2.00. Sandhill Aircraft, Box 336, Atkinson, Nebraska.

PROPELLERS, plans, supplies for airboats and snowplanes. Latest designs, prompt delivery. Catalog 25c. Banks-Maxwell, Box 3301G, Ft. Worth 5, Texas.

HOMEBUILT Helicopter Handbook — Reference, Information: $1.00. Homebuilt Helicopter Directory—Pictures; Specifications: $1.00. Urshan, Box 4332, North Park Station, San Diego 4, California.

6 BATTERIES, GENERATORS, ETC.

EDISON Nickel Storage Batteries. Any voltage, any amperage. Unconditionally guaranteed. Power Plants, Generators, Motors, Literature. Hawley Smith Co., Croton Falls 2, New York.

7 ELECTRICAL SUPPLIES & EQUIPMENT

DC Power Supplies, Laboratory, Test Units. DC Motor Controls. Complete line selenium rectifiers, meters, transformers and other replacement parts. Ramyr, Dept. D-2, 1624 East First Street, Los Angeles 33, California.

ELECTRIC Pencil: Engraves all Metals, $2.00. Beyer Mfg., 10511-C Springfield, Chicago 43.

BOOK, 200 Electric Stunts $1.00. Cutting, 26278 Arastradero, Los Altos, Calif.

FREE Catalog, motor rewinders supplies, instructions, diagrams, equipment plans. Modern, Box 8715, Kansas City 14, Mo.

MAGNETIZER—Magnetizes—Screwdrivers, etc. Only $1.00 Postpaid. Kubiak, Huntingdon Valley, Penna.

LAMP parts Wholesale Thousands of items for repairing, converting. Catalog 25c. Brown Lamp, Box 305D, Clayton 5, Missouri.

7A AIR CONDITIONING

ADVANCE yourself in Heating, Air-Conditioning through self-instruction method. Includes key lectures. Prepared by registered professional engineer, technical instructor. Send $12.00 or write David C. Choate, Box 5, Campus Station, Cincinnati, Ohio.

8 WELDING, SOLDERING

NEW Metal Etching And Soldering Unit. Use Car Battery Or 110V. Write Actograph, 222 York Road, Jenkintown, Pennsylvania.

BUILD-Your-Own welder or welder and power combination. Low cost unit connected to used engine lets you weld anywhere. Free booklet tells how. Get into profitable welding business. Write Hobartweld, Box F-1172, Troy, Ohio.

WELDERS, 110/220. Welds ½". $39.50. Morris, 1070 Inner Drive, Schenectady, New York.

NEW And different oxy-acetylene outfit welds, cuts, heats, brazes, with interchangeable tips. No attachments needed. Light, portable. Complete outfit, full instructions, only $84.50. Special money-saving plan for oxygen and acetylene supply. Write for free literature today: Dept. S, Linde Company, 30 East 42nd Street, New York 17, N. Y.

BUILD fast selling welded hand trucks (Merchandise — Beverage — Appliance — Etc.) We supply production models (Sample "Utility" $9.95) Information: Wilson Steel Products, Childersburg, Alabama.

BUY welding supplies direct from manufacturer. Cable, welding rods, helmets, etc. Portable Arc-Welders and kits at tremendous savings. Free factory catalog! LeJay Mfg. Co., 2923 Emerson Ave. So., Minneapolis, Minnesota.

ACETYLENE Welding Outfits new $54.50; Arcwelders $56.50; Eagle Welding, Dept. 42, 5085 Broadway, Chicago 40, Ill.

A. C. Welders, four sizes, lowest prices. Free Literature. Holgerson Co., Canton, Kansas.

9 MACHINERY, TOOL SUPPLIES, ETC.

WOODSMEN . . . read about the amazing Spencer No Bounce magnesium wedge —Ideal for frozen wood. Send for free copy of Chain Saw Age magazine, Portland 66, Oregon.

POWER Tools, not toys. Discounts. Factory catalogs. World Tool Supply, Box 4404, Joyfield Station, Detroit 28, Michigan.

$15.07 DISCOUNT on New Skil Drill'n Drive Kit. Drills, Drives, Bores, Counter sinks in woods, plastics and light metals. You get Powerful Skil ¼" Drill with Jacobs Geared Chuck plus 16 practical drill and screw driver accessories. $36.95 Value —Our Discount Price $21.88. Send checks, cash, Money orders. We pay postage. Mendelsohns, Inc., Waltham 54, Mass.

OIL Drum Cement Mixer Assembly Kit. Circular. Nu-Way-Do Co., Newaygo, Michigan.

FAMOUS Payswell Sprayer, compressor, motor, gun all in one unit, 50 lbs. pressure, 9 payments available. Will take old sprayers in trade. Further information write Sellco Corp., 224 W. 7th St., St. Paul, Minn.

10 HSS Taps, Sizes up to ¾", Govt. Surplus, $15.00 Value. Only $3.00 Postpaid. Surplus Sales, Jacksonville, Texas.

NEW design telescoping, slot gages, hobby knives. Write Campbell Tools Co., 1424 Barclay Road, Springfield, Ohio.

9A TRIGONOMETERS

ENGINEERS, Draftsmen, Students: Triangulator Makes Trigonometry Easy. $1.00. No C.O.D. Trical, Box 67, Buffalo 15, New York.

10 ENGINES, MOTORS, ETC.

DIESEL Injector Parts Wanted GM71-110 Series. Mayer, 7120 Carnegie, Cleveland 3, Ohio.

REWIND Motors yourself. Complete instructions $1.00. Lewis Mfg., Howell 11, Michigan.

ELECTRIC Repairmen, Send for catalog Ohmmeters winding equipment. Motor Industries, Quincy, Illinois.

GAS Engines: Foreclosure Sale; 1½ to 7 H.P. Brand New, Factory Fresh, Latest Models: Briggs Stratton, Clinton, Lauson: Positively Below wholesale prices or Your Money Back. $23.50 & up (Freight Paid): Details Free: Northern, 172-S Merrimac Street, Boston 14, Massachusetts.

11 BOATS, OUTBOARD MOTORS

NEW, used, rebuilt marine motors. Marine conversions, fittings. Free Catalog. Stokes Marine Supply, Dept. 23, Coldwater, Mich.

BOAT Plans—Full Size Patterns—Frame Kits. Modern Inboards and Outboards for amateur builders. Complete New Catalog 50c or specify requirements. Glen Marine, Box 568, Compton, Calif.

FREE big catalog; Boat Kits save ½ to 2/3 "factory built" prices. 8' through 18' outboards designed for amateur assembly. Trailers, Fiberglas, Hardware, Accessories. Luger, Dept. K-11 3404 Lyndale South, Minneapolis 8, Minnesota.

FULL size, cut-to-shape boat patterns, blueprints, 7½-38 feet. Big new 68 pg. illustrated "Build a Boat" Catalog of Naval architect-designed Cruisers, Runabouts, Skiffs, Outboard Boats, Sailing, Racing, Houseboats, 50c. "How to Build a Boat" Booklet, $2.50. Hardware & Equipment Catalog $2.00. Cleveland Boat Blueprint Co., Dept. A-77, Cleveland, Ohio.

MARINE conversions for Ford and Jeep engines. Catalog 25c. Lehman Manufacturing Co., 972A Broad St., Newark 2, N.J.

CATALOGUE free—boating flags, gifts, gadgets. Lighthouse, Box 145-A, Plymouth, Mass.

AUTOMATIC Pilot. Build Yourself Schematic, Illustrations, Instructions $2. Malkasian Industries, 1937 4th W., Seattle 99, Washington.

CATALOGS; Powerboat Plans, 50c, Sailboat Plans, 25c. Marinecraft, Box 161-P, Brighton, Mass.

12 BODY-BUILDING COURSES, JIU JITSU & ATHLETIC EQUIPMENT

BUILD powerful arms, chest, shoulders! 22 exercises, $1. Fonsad, Box 601-C, 1100 Market, Wilmington 99, Delaware.

JUDO—Defeat Bullies. 36 Lessons $1.00. 1112 Tipton St., High Point, North Carolina.

YOURS—a body like a Greek God! Startling, amazingly Quick New method explained in free literature. Send name and address to: DeVel-O-Flex, 3607 W. Magnolia Blvd., Burbank, California.

BE Taller! Coach's genuine "Inch-at-a-Time" height-increase System. Wonderful results reported! $1.00 complete. Guaranteed. Marty Snyder, Box 195-PF, Union City, N. J.

OUTSTANDING Physical Development! Any Age. New Guaranteed Discovery Uses Only A Rope! Strength, Health, Muscles. Gain-Reduce. Free Booklet. Ropercise, 4834-B Art, San Diego 15, California.

WEAK Back—Strengthen Lower Back Muscles—No Equipment—Free Literature —"Lucky" Stein, 311 Delsea Drive, Woodbury, New Jersey.

BECOME a "Jiu Jitsu" Expert! Exciting book shows latest methods! Only $1.00. "Scientific Boxing" sent Free with each order. Money back guarantee! Southland Products, Box 41, Lincolnton 8, North Carolina.

BARBELLS, Dumbbells, Exercise equipment Courses. Free booklet. Good Barbell Co., Siloam Springs, Ark.

EMERGENCY Ju-Jitsu! Complete Illustrated Course, $1.00. Defend Yourself from Two Men, Boxers and Wrestlers. Learn the Latest and Most Effective Tactics Known from Experts. Only Course of its Kind. Satisfaction Guaranteed. Ju-Jitsu Clubs, Mountain View 2, N. J.

PUSHED around? Don't take nonsense from bullies. Give them the shock of their lives. Easy when you know Police Jiu Jitsu. Complete fully illustrated course in one volume as taught police and armed forces. Send $1 now. Money back guarantee. Books Publishing Co., Amityville 39, N. Y.

BEAT The Bullies with Jiu Jitsu—Super Judo. Complete Course $1.00. Be Taller! Latest instructions! $1.00. ABC, Box 849, San Francisco 1-JS, California.

BARBELLS, Body Building equipment. Courses. Free Catalog. Reading Barbell Co., Reading, Pennsylvania.

14 FIELD GLASSES, TELESCOPES

BUILD your own Reflector Telescope. Complete kit: Mirror, Eyepieces, Tripod, all other accessories. Request free illustrated literature. Criterion Manufacturing, Dept. KP-37, Hartford, Connecticut.

MICROSCOPE Catalog Free. Research Scientific Supplies, 126 West 23rd Street, New York 11, N.Y.

POPULAR SCIENCE OPPORTUNITIES

FREE Catalogue! Thousands war surplus optical bargains. Lenses, Prisms, Telescopes, Binoculars, etc. Send $1.00 for 10 Lens Hobbyist Set and Project booklet. G. Jaegers, 691 West Merrick Road, Lynbrook, New York.

WAR Surplus bargains! Millions of lenses, instruments, telescopes, binoculars, components and complete line of astronomical telescope items. World's greatest optical market place! Send only $1.00 for beginner's 10-lens kit and big instruction booklet Stock 2-CN. Write for catalog-CN Free. Edmund Scientific Co., Barrington, New Jersey.

BINOCULARS, telescopes, microscopes. Terrific values $3.98 up. Request free money-saving catalog. Criterion, Dept. S-60, Hartford, Connecticut.

REFLECTOR Telescope Kits $7.25 (3") to $175.00 (12"). Mirrors, Cells, Focusing Mounts, Tripods, Eye Systems. Anything, everything in telescopes. Free Catalog. Also Ready to use telescopes from $25.00. Esco Products, Oakridge, New Jersey.

AMAZING prices precision binoculars. Folder. "Binocular Selecting," catalog free. Dealers also write. Prentiss Importers, Mercury Bldg., West Los Angeles 25, California.

REFLECTING Telescopes completely assembled. 60X, $29.75. Guaranteed Observatory clearness. Free information. Skyscope, 475 Fifth Avenue, New York 17.

ASTRONOMICAL Books, Star-Atlases, free list. Herbert Luft, 69-11 229th Street, Bayside 64, New York.

REFRACTOR and reflector telescopes. Also mirrors, lenses, tripods, etc., for making your own telescopes. Free illustrated catalog. Suffolk Science, Mattituck, N. Y.

MAKE 6" Telescope reflector. Glass, abrasives, instructions—$12.00. F. Cameron, Box 65, Inwood 96, New York.

DYNASCOPE—Sensational New Reflector Telescope. Send for details. Criterion Company, Dept. DS-43, Hartford, Connecticut.

15 SPORTING GOODS, GUNS, FISHING TACKLE, ARCHERY, TRAPPING

FREE—Giant 1957 Wholesale Sporting Goods Catalog. Lowest wholesale prices. Complete line of cameras, sporting goods, appliances, outdoor items. Write today. Santa Fe Distributing Co., 1321 Main St., Dept. PS, Kansas City, Missouri.

FREE 152 Page Fishing Catalog—Includes latest "Do It Yourself" kits. Netcraft Company, Dept. A11, Toledo 13, Ohio.

ASH Plywood Ski Blanks, Electronically Glued. 74" x 22". Each Blank will make Three Skis or One Surfboard. $7.00 per Blank. Shipped Direct. Ingram Plywoods, Inc., Thomasville, N. C.

5,000 BARGAINS, firearms, binoculars, war relics, catalog 50c. Smith Museum, Runnemede, N. J.

FREE Below Wholesale fishing catalog. Fishing Tackle Mart, Dept. 611, Box 6737, Chicago, Ill.

MOLDS for Fisherman's Sinkers, Jigs, Squids, Casting and Spinning Lures. Free Catalogue. Sweet's Molds, Tonawanda 3, New York.

JAP rifles altering American shells $6.00. Jap shells $3.95, catalog 5c. TP Shop, West Branch 10, Michigan.

COLTS—Remingtons—Winchesters—Lugers—P-38's—Kentuckies—Springfields—Antique—Modern Guns & Guncessory Values—Big Bargain Catalog 50c. Agramonte's, Yonkers 2A, N. Y.

SPORTSMAN Norelco Battery Operated Electric Shaver uses Flashlight Batteries or Cigarette Lighter Plug in 6 or 12 volt. In Handsome Maroon Complete with Case Mirror Adapter Plug $24.95. Howard Company, 633 Margarita Road, Rialto, California.

16 CAMPING EQUIPMENT & TENTS

TENTS, world's largest selection, direct from manufacturer. Send 20c for 136 page Tent, Camping Equipment Catalogue-Handbook listing all national camping sites. (Print name—address.) Morsan, 10-15G 50th Avenue, Long Island City 1, New York.

17 DOGS, BIRDS, HAMSTERS, RABBITS & PETS

HAMSTERS—Golden, young, $3.00 pair. Fully developed, $4.00 Pair. Adirondack Hamstry, Prospect 13-M, New York.

RAISE rabbits on $500 month plan. Plenty markets. Free details. White's Rabbitry, Delaware, Ohio.

RAISE Mink: Free booklet, pen plans, inside "secrets," feed, care. Mink are money makers. Investigate today. Lawrence Molgard, Brigham City 13, Utah.

SOUTH American Large Billed Hawks $17.50, Black Collared $35.00, Red Winged $25.00, Sparrow Hawks $15.00, 50% deposit. Tarpon Zoo, Tarpon Springs, Florida.

MAKE Big Money Raising Nutria, Chinchillas, Cavies, Mink, Rabbits, or Pigeons for us. Free information. Keeney Brothers, New Freedom, Pennsylvania.

WE Pay $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 177, 2954 Admiral Way, Seattle, Wash.

MINIATURE Bird Bath. Resembles Fountain. 25c. Box 22, Bridgewater, Massachusetts.

HAMSTERS—Ideal Pets. Young golden pairs $2.95, Breeders $3.95. Free booklet. Jer-Fre's Hamstery, 2425 Hoyt, Muskegon Heights 14, Michigan.

MINK $18.00 each. Darks and mutations. Free price list. Blue Sky Mink Ranch, Henry, Illinois.

ANGORAS, Chinchillas—World's most profitable rabbits! Particulars free. Grinsteads, Edwardsville, Illinois.

18 EARTHWORMS & FROGS

$10,000 YEAR possible, earthworms. 32 Page booklet tells how 35c. Missouri Earthworm Research, Box C-6851, Kansas City, Missouri.

19 FARMS, OTHER REAL ESTATE

FLORIDA—Nice homesites, $345 at $10 monthly. Folder Free. Winfree Vernor, DeLand, Florida.

STROUT Catalog—Free! 3,130 Bargains, 34 States, Coast-to-Coast. Farms, Homes, Businesses. World's Largest! 57 Years Service. Strout Realty, 251-ZB 4th Ave., New York 10, New York.

FLORIDA Keys Homesites $595. At $1.00 weekly. H. D. Smith, Islamorada, Florida.

FLORIDA At Its Best—Enjoy Life in Lynn Haven, Bay County, on beautiful St. Andrew Bay, Northwest Florida. Near superb Gulf beaches. Cool summers, mild winters. Excellent fishing, hunting. Year-round gardening. Pay less for homesite, house construction. Friendly, conservative, community. Brochure free. Chamber of Commerce, Lynn Haven 4, Florida.

FLORIDA'S Pine Forest Mobile-Home Manor. Beautifully wooded deluxe Trailer Sites, 40 by 80 feet, $345 payable $15 down, $15 monthly. Famous Panama City Gulf Resort Area. Excellent hunting, fishing, all sports. Also lovely Wooded Homesites—low prices, easy terms. Booklet Free. Douglas Wood, Fountain, Florida.

YOUR Property listed in nationally advertised directory, 50 words $1.00. Box 494, Palmetto, Florida.

22 PROFITABLE OCCUPATIONS

$5000 FROM Half Acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, Sperling, Manitoba.

FREE "$5,000-$45,000; Unlimited Vacations." Work home! No merchandise, equipment! Haylings-PS, Carlsbad, Calif.

FREE Folder, "How To Make $3,000 Yearly Sparetime, Backyard, Raising Earthworms!" Oakhaven-7, Cedar Hill, Texas.

BIG Profits in Welding. Easy to learn. Low cost training in completely equipped Non-Profit school. GI Approved. Write for Free Booklet—Hobart Trade School, Box P-1173, Troy, Ohio.

SAVE Money! Buy Wholesale! Free Catalog General Merchandise. Norris, 487-H Broadway, New York.

BUY Wholesale! Over 10,000 Nationally Advertised Products. Appliances, Cameras, Sporting Goods, Housewares, Watches, Typewriters, Tools, Clothing, etc. Send Postcard Today. Buy-Rite, Box 258, Hawthorne 7, New Jersey.

WANT more enjoyable livelihood? Learn Mail Order. Valuable Booklet 25c (refundable). Zed Gwartney, Desert Hot Springs, California.

THEY Hand him $100. Free Packet. "Secret Journal" 919 secrets—plans! Work home. Publico-N4, Oceanside, Calif.

REPAIR Porcelain on Appliances. Much Needed Service! Profitable! Free Information. Porcelain Repair, 466 Potomac, Buffalo 13, New York.

WRITE Verses For Profit. Information Free. Hobbies, 1603-A11 Sun Valley, Austin, Minnesota.

VENDING Machines—No Selling. Operate A Route of Coin Machines And Earn Amazing Profits. 32-Page Catalog Free. Parkway Machine Corporation, Dept. 17, 715 Ensor Street, Baltimore 2, Maryland.

WE Pay $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 101, 2954 Admiral Way, Seattle, Wash.

LEARN Invisible Reweaving At Home. Free Details. Jack's Service, P.O. Box 3451, Freeport, Illinois.

FREE Literature—Make Big Money Raising Fishworms and Crickets. Carter Farm-10, Plains, Ga.

$60.00 WEEKLY sparetime. Start home Venetian Blind Laundry. Protected Territory. Interesting information free. Burtt, 2434EX, Wichita 13, Kansas.

BIG Multicolor Wholesale Catalog! Housewares, Appliances, clothing, silverware, cookware, luggage, binoculars, radios, phonographs, cameras, recorders, projectors, typewriters, shavers, sporting goods, toys, tools, sewing machines, watches, jewelry. Name brands. Huge discounts. Postcard: Selbyco, Decatur 474, Illinois.

FREE Book "505 Odd, Successful Businesses." Work home! Pacific—37C, Oceanside, Calif.

MAKE Chipped Glass Nameplates. Re-Silvering Mirrors. Electroplating. Outfit Prices. Sprinkle, Plater V90, Marion, Indiana.

MAKE posters. Pays. Dollar brings easy instructions. Paul Allen, Dryden, N. Y.

MUSHROOMS Quicker, Easier, Cheaper. Newest Facts Free. Luxorco, 641 South 19th, Newark 3, N. J.

23 BOOKS & MAGAZINES

GOOD Used Books, 50c-$1. Free Lists. Editions, Dept. PS, Hempstead, New York.

WE want to buy old copies of Popular Science—any issue from period 1890 to 1915. Condition not too important provided books are complete with no pages removed. Write to Box No. 308, Tuckahoe, New York.

BRITISH Book Bargains. Any subject. Catalog free. Transbooks, Box 1-PSW, Wantagh, New York.

DO-It-Yourself Books: Free list. Stanford Simon, Box 931, Lake Arthur, La.

ATHEIST Books. Catalogue free. Truth Seeker Co., 38 Park Row, New York 8.

BOOKHUNTERS: All Subjects. Send Wants! Jaher Book Service, 183 Hazelwood Drive, Westbury, New York.

FUN with your Typewriter. Over 300 Designs. Only $1.10. Artcraft, Baldwin, Maryland.

JOHN Friend, Bookfinder, can get the books you want. Free Search Service. Box 2570PS, Long Beach 1, California.

POPULAR SCIENCE OPPORTUNITIES

BOOKHUNTERS! Scarce, Miscellaneous Books. Atlantic Book Service, 10 Cedar, Charlestown 29, Massachusetts.

MATHEMATICS — Language — Science Booklets! Free Lists. Franks, 3121 South Racine, Chicago 8.

FREE Book Catalog Many Interesting Subjects. Books Publishing Co., Amityville 39, N. Y.

SAVE—Make money. How-to books. List free. Young, Box 726, Detroit 31, Michigan.

NATIONAL Geographic Magazines 1888-1952. Any issue. Periodical Service, Box 465-PS, Wilmington, Delaware.

24 HYPNOTISM

FREE Illustrated Hypnotism. Selfhypnosis Catalogue. Write: Hypnotist, 8721 Sunset, Hollywood 46P, California.

BEGINNER'S Hypnosis . . . illustrated . . . $1.00 Moneyback Guarantee. Baltimore School of Hypnotism, Dept. 711C, Box 6229, Baltimore 6, Maryland.

FREE Catalog! Hypnotism, Autohypnosis! Books, Tapes, Records! Drawer PS11-697, Ruidoso, New Mexico.

HYPNOTIZE Successfully! Learn Easy, Fast, Modern Methods. Complete, Illustrated Course, including self-hypnosis and "Secret Nerve Pressure Technique" (Guaranteed Harmless)—$1.00. H. Fowler, 850 Draper Ave., Schenectady 6, New York.

LEARN Hypnotism—our book 25 lessons in Hypnotism shows how to achieve business and social success. $1 postpaid. Satisfaction guaranteed. Books Publishing Co., Amityville 29, New York.

EX-Ray Mind! Hypnotize, one glance. Guaranteed, $3.00. Wamsteker, Box 10, Ottery, Cape, South Africa.

HYPNOTISM! Complete Course! 25 lessons 75c. Mind Reading Course $1.00. ABC Publications, Box 849, San Francisco 1-V California.

24A GAMES & ENTERTAINMENT

BINGO Players—Be Wise, Use Renraw's Tried Tested Favorable Number System. $1.50. Renraw, 19 Irvington Pl., Trenton 10, New Jersey.

25 MAGIC TRICKS, PUZZLES, ETC.

FREE Vanishing Cards with Magic Catalog, 10c. Magician Ward, 60 East 42nd, New York 17.

500 TRICKS, Douglas famous 120-page Catalog, only 10c. Fastest service to magicians for 30 years. Send 10c today. Douglas Magicland, Dept. 2, Dallas, Texas.

WORLD'S finest professional magic. Joker novelties. Giant illustrated catalog 10c. Top Hat, Evanston 13, Illinois.

3100 NOVELTIES, Jokes, Tricks, Gadgets, Funmakers, Hobbies. Big catalog 10c. Johnson-Smith, D-423, Detroit 7.

MAGICIANS, Gamblers winnings exposed. Cards, Dice, Slot, Pinball, Catalog 10c. Box 671, St. Louis 1, Missouri.

JOKES—Novelties—Tricks, 3—$1.00. George Herm, 111 Center St., Redwood City, Calif.

BE the life-of-the-party! Join professional comedian's club. Details free! Orrin, 2682 Filbert, San Francisco 23, Calif.

GO Ventriloquist, all secrets told. Make money, surprise friends, have fun. Send 35c for catalogue of dummies, dialogues, etc. Limited supply. Gough, 203, E. Kickapoo, Hartford City, Indiana.

HINDOO Rope Mystery and Catalog 25c. Hocus Pocus, 317 North State, Jackson, Mississippi.

STINKBOMBS. 12 $1. Disgustingly potent! Kits. 1452-E Drake, San Pablo, California.

BE a magician! Large professional catalog of latest tricks, 35c. Ireland, F-109 North Dearborn, Chicago 2, Illinois.

FANTASTIC! Einstein visually proven correct! Matter changed before your very eyes. It will mystify you. $1.00. P & M Sales, Box 362, Hammond, Indiana.

E-Z Magic Catalog 25c. Eastern, P.O. Box 81, No. Westport, Mass.

COMPLETELY Illustrated Professional—Amateur Magic Catalog 25c. Stowell's, Woodstock, New York.

FREE! Illustrated Magic—Houdini Escapes—Novelties Catalog. Get Yours today! Heaney Famous Magician, Oshkosh, Wisconsin.

SMOKEBOMBS 25c, 7 for $1.00. (Terrific!) 4463-PS Greene, Philadelphia 44.

DOLLAR Magic Set Free with Catalog 25c. 4462-PS Germantown, Philadelphia.

WHOLESALE! Thirty 10c Trick Novelties $1.00! (Profits!) 1746-SW Market, Philadelphia 3.

SENSATIONAL Magician's Wand (Vanishes Handkerchief!) 25c, catalog included. Box 1352-PS, Philadelphia 5.

"VENTRILLO" Professional Voice Thrower and Catalog 25c! Box 971-PS, Philadelphia 5.

26 COINS & CURRENCY

COINS from Formosa, Vatican, etc., plus foreign banknote, 10c with coin approvals. Littleton Coin Company, Littleton 82, New Hampshire.

GET Profit and Pleasure in collecting old coins. Send 10c for 56-page illustrated coin catalog. You'll be delighted with it. Send for it now. B. Max Mehl, 374 Mehl Building, Fort Worth, Texas. Largest rare coin establishment in U. S. Established 57 years.

10 INDIAN Head cents plus price lists, $1 postpaid. Louis Bell, Masonic Building, Decatur, Alabama.

$100.00 FOR certain pennies. Booklet listing prices, 25c. Lincoln Coins, D-4, Glendale, Arizona.

FLYING Eagle plus Large Cent $2.00. Rhode, 105 Windsor, Reading, Pa.

ONE Million Dollars Confederate Money in $10's, $20's, $50's, $100's etc. only $2.98. Limit four million for only $10.00. Best Values Company, Dept. 3, 401 Market Street, Newark, New Jersey.

SEVEN Different Barber Dimes $1.00. Bargain Lists Free. Sayers, 1000 Unaka, Johnson City, Tennessee.

$4,000.00 FOR 1913 Liberty Head Nickel. Uncirculated Dollars 1804 to 1839, 1893-S, 1895-P, 1903-O pay $100.00-$5,000.00. Certain dates—Small Cents before 1915—pay up to $325.00; Dimes, before 1917—$2,000.00; Quarters before 1924—$1,000.00; Half Dollars before 1905—$1,000.00; 2c pieces—$70.00; 3c pieces—$90.00; Halfdimes—$500.00. Hundreds of others worth $10.00—$1,000.00. Canadian Coins—1921, 5c. Silver, $50.00. 1875 Quarters—$50.00. 1921—50c—$200.00. Wanted—20c Pieces, Gold Coins, Paper Money, etc. Our Large Illustrated Guarantee Buying-Selling Catalogue, Giving Complete Allcoin Information—Send $1.00. Purchase Catalogue before sending coins. Worthycoin Corporation, Leader's Numismatic Quotations, K-409-C, Boston 8, Mass.

MORGAN Dollars; 1878-87-89-90-91 $2.00 ea. Catalogue 25c. Shultz, Salt Lake City 10, Utah.

COIN Magazine, 160 pages. Sample 35c. Numismatic, 7320 Milwaukee, Chicago 31.

BOOK Collecting Coins 75c Cash. Joseph Coffin, 1182 Broadway, New York 1, New York.

60 SPECIALLY Selected Coins, $1.00. Oddchon, Box 482, St. Louis, Mo.

COMPLETE United States coin bargain lists, Indianhead cent, 10c. Economy Sales, 156-B Dean, Mansfield, Massachusetts.

12 DIFFERENT Indian Cents, and Coin List only $1.00. Pounds, Box 231J, North Wales, Pennsylvania.

10 MIXED Foreign Coins—Bills: 10c. Dwight Musser, Dunbar, West Virginia.

LINCOLN Cents 1910-S, 1913-S, 1921-S, 1923-S, 1924-S all for $2.00. Gasser's Box 34615, Los Angeles 34, California.

LINCOLN, Indian Cents, all dates. 1955-S Cent uncirculated and complete pricelist 25c. Penny Mart, CE-9, Box 629, Chicago 90.

SILVER Dollars: Uncirculated. 1880o through 1885o $3.50 each. 1893cc $15.00. Retail lists 10c. Holden's, Garwin, Iowa.

SELLOUT! U. S. Coins. List 25c. "Terrific Bargains" Drawer 76, Hickory, N. C.

12 DIFFERENT Indianheads Bargain Lists. $1.00. Hutchinson, Box 4747, Philadelphia 34, Penna.

HONDURAS, Austria, Finland, Switzerland's Coins — All 10c; Jolie, Roslyn Heights, N. Y.

COMMEMORATIVE $1/2—Ten different, Brilliant Uncirculated Only $34.50. Large Dollar Bill, Crisp New $7.50. $5 Gold $11.95. Highest Cash Prices Paid all Gold Coins, any Quantity. Gigantic 80-Page Bargain Retail Catalogue (Only one like it in America) $1.00. Bebee's, 4514 North 30th, Omaha 11, Nebraska.

MEXICO Mint Set Centavos—1957, brilliant uncirculated, 5 different beautiful coins. Look like gold! Start a "good neighbor" collection. Makes a beautiful inexpensive gift. One set only $1.00; 3 sets $2.75; 10 sets $8.50. Postpaid. Money-back guarantee. Postal Products Company, Fast Mail Order, Joe Gordon, A.N.A., 5614-SC California St., San Francisco 21, California.

SAN Francisco Mint Closed! Made only cents and dimes in 1955. In short supply and great demand. One each, brilliant uncirculated for 25c. Free coin lists with order. Bryson Coin Company, 612 White, Toledo 5, Ohio.

PROOF Sets, 1957 set only $2.50, 1956—$4.00, 1955—$6.00, 1954—$7.00, 1953—$12.00, 1952—$20.00. 1951—$30.00, 1950—$49.00. Complete sets 1950-1957 inclusive—$120.00. Postpaid, prompt shipment. Money-back guarantee. Dan's—Dan Morafka, A.N.A., 432-S 23rd Avenue, San Francisco 21, California.

28 STAMP COLLECTING

TWO $5.00 US stamps plus 20 different, 10c with US approvals. Irwin Stamp Co., Box 1109, Brooklyn 30, New York.

AMAZING Offer! 200 U.S. stamps—including commemoratives, airmails, high denominations to $1.00—only 10c to Approval Applicants!! Illustrated Bargain Lists free. Mystic Stamp Co., Dept. 55, Camden, New York.

U.S. Classics—Over 59 Yrs. Old. 15 Selected oldtimers. Missing in biggest collections. All 15 at less than 1c each. 10c with approvals. Jaro, Box 246-F, New York 8

ICELAND 10 different beautiful stamps for only 10 cents to applicants for our good old fashioned approvals. Old Colony Stamp Co., Dept. B, Milford, Conn.

UNITED States commemorative collection containing 33 different—10c. Approvals. White, 516-W Avenue L, Brooklyn 30, New York.

WEIRD Diamond Shape Coffee Stamps. Lovely Flower Triangle! First American big commemorative. Greenland, Idol Dancer, etc. Free with approvals. Capital Stamp Co., Ferrysburg 10, Michigan.

30,000 DIFFERENT 1½c each! Build biggest collection—as fast as you like. Start Now! Free details. Huppert, 1972 E. 18th Street, Brooklyn 29, New York.

"WOW!" 135 All Different Germany 10c. Big collection includes old Zeppelins. Semi-Postals, Airmail, High Values, Giant and Midget-sized Stamps. Extra! Complete bargain catalog, free booklet. Approvals. Jamestown Stamp Company, Dept. A11PSC, Jamestown, New York.

225 STAMPS For only 10c! This mammoth value includes Airmails, Pictorials; stamps from strange Countries cataloguing up to 25c each! Also Approvals. Mystic Stamp Company, Camden 55, N. Y.

FREE! 107 British Colony Stamps. All different, from Britain's farflung colonial empire. Catalog value $2.50. Free Stamp Magazine, Approvals. Send 10c for handling. Act now! Niagara Stamp Co., St. Catherine's 72, Ontario.

POPULAR SCIENCE OPPORTUNITIES

200 WORLDWIDE 25c plus surprise packet. Packet list free. Econopackets, Box 168, Riverside 22, Calif.

"ABE Lincoln" Giant Diamond, rainbow colored Flag Set, Israel, South Korea, 50 others different, only 10c. Approvals. Champlain Company, Isle La Motte, Vermont.

WORLDWIDE, 50 all different, absolutely free, just to introduce our incomparable approvals. Kent Stamp Company, GPO Box 87, Brooklyn, N. Y.

100 DIFFERENT U.S. Commemoratives Plus 100 Different Foreign Stamps $1.00 To Applicants For Our Fine Approvals. Willard Snyder, 6904 Henley St., Philadelphia 19, Pennsylvania.

FIRST Days Flights Navys. Approvals. Barr, 467 Oneida, Pittsburgh 11, Pennsylvania.

U.S. Canada giant Price list 100 Pages, 700 Illustrations 10c. Thom, 4808 15th Avenue, Minneapolis 17, Minnesota.

PENNY Approvals. Thousands. Bargains for pennies. Gifts with purchases. Penny Stamps, Orange 2, California.

FREE Packet!!! Angola, Azores, Mongolia, Nepal, Palestine. Fascinating Approvals. Coral, Box 7095, Ludlam, Miami 55, Florida.

STAMP Collecting Outfit, includes packet worldwide stamps, package hinges, watermark detector, millimeter gauge. Everything 10c with approvals. Lorrain Brown, Marlon, Michigan.

500 DIFFERENT world wide stamps only 50c with approvals. Littleton Stamp Company, Littleton T2, New Hampshire.

200 WORLDWIDE 10c to Approval Applicants. Collins', Box 125, Shell Beach, California.

1958 U.S. illustrated catalogue free. Stone, 192 Washington, Boston 8, Massachusetts.

FREE—Mint British Colonies from North Borneo, Caymans, Seychelles, Dominica, Papua, New Guinea, Sarawak, Brunei. Free with approvals. Viking, Great Neck 5, New York.

TOPS! Free book, "How To Collect Stamps." Send for your copy today! Approvals. Littleton Stamp Co., Littleton E2, N.H.

GIANT Diamond, Midget Triangle, Timor, 26 others, 3c. Approvals. Carpenter, Box 310, Claremont, California.

EXCITING Surprise Lots 25c, guaranteed value, approvals accompany. Beacon, Box 161B, Woodside 77, New York.

AUSTRALIA, Fifty Different, 10c with Approvals. S. Molzan, 720 Pomona, El Cerrito 8, California.

SEND Two Dimes for Large Illustrated U.S. Price List. New-Way Stamp, Lawrence, Mass.

FREE!! Absolutely Free! Fantastic Fish Triangle. Approvals. Beaman, Dayton, Tennessee.

1,000 DIFFERENT, $1.00 with approvals. Golden's, 6721 Eastwood, Phila. 49, Pennsylvania.

50 SOUTH American Free. Attractive, Interesting Approvals. Superior Stamps, Box 53P, Cathedral Station, New York 25, New York.

1000 DIFFERENT Worldwide Stamps $1.00. Universal, Box 6, Kenosha 6, Wisconsin.

RED China, 25 fine different unused, 3c. Approvals. Jim's, 1317 Apple, Silver Spring, Maryland.

ZOO Collection Free With Approval Applicants. Handling 10c. Williams, Diamond, Pennsylvania.

1500 STAMPS. $1.00. Good variety. On and off paper. World wide. Many pictorials. No approvals follow. Satisfaction guaranteed. Whalen, 1435 First Ave., Oakland 6, California.

1847 AMERICAN, Kelly Wedding, 25 others, 3c. Approvals. Westend, 221 North Monastery, Baltimore 29, Maryland.

GIGANTIC Collection Free — Includes Triangles—Early United States—Animals — Commemoratives — British Colonies — High Value Pictorials, etc. Complete Collection plus Big Illustrated Magazine all free. Send 5c for postage. Gray Stamp Company, Dept. PR, Toronto, Canada.

100 DIFFERENT Stamps, 10c with approvals. Smith, 508U Brooks, College Station, Texas.

ABSOLUTELY Free!! Giant, Midget Triangle Beauties!! Approvals. Weintraub, 325 East Houston, Tyler, Texas.

ONE Pound General Foreign Stamp Mixture $2.50. Veteran Frank Stroskey, 223 Market St., Perth Amboy, New Jersey.

FREE! Amazing List! Alphabetical! Two Feet Long! Stampmart, Hartford 1, Conn.

FIRST U.N. Set Among World's Prettiest. Only 10c. Approvals. Welles, Box 1246-V, New York City 8.

FREE! 107 British Colony Stamps. All different, from Britain's farflung colonial empire. Catalog value $2.50. Free stamp magazine. Approvals. Send 10c for handling. Act now! Lincoln Stamp Co., St. Catharine's 419, Ontario.

FREE 60 Different Stamps With Approvals. Send 5c Postage. Stanley Zajac, 159 Emerson Ave. Toronto, Canada.

100 OLD U.S. Stamps between 1861 and 1935 $1.00. Rousch Stamps, 51 Chestnut, Mansfield, Ohio.

ECONOMICAL ½-3c Approvals. 33,000 varieties. Dresel, Box 128-T, West Englewood, New Jersey.

TEN Israel, Free!!! Popular-Priced, Attractive Approvals Accompany. Nymedi, Box 503, Biloxi, Mississippi.

15 SPORT Stamps 10c, Approvals. Coral, Box 224, Riverside Sta., Miami, Fla.

FOREIGN Stamps on Approval, 1c to 5c. Perino, 1219 Grandview, Pittsburgh 11, Pa.

BEAUTIFUL Mint Sets 10c. Approvals. Rawls, 9098 West Swan Circle, Brentwood 17, Missouri.

505 DIFFERENT 50c,—1010—$1.10. Approvals. Klondike, 682 Jefferson, Elgin, Illinois.

FREE! Giant catalog offering thousands of bargains. Sent with beautiful approvals. Jamestown Stamp Company, Dept. E11PSC, Jamestown, New York.

FREE!! Flag Stamps!! Tricolored Beauties, 6 different. Approvals. Hughes, 16 Bloomfield, Pawtucket, Rhode Island.

UNITED States Commemorative and plate block price lists free. No approvals. Frank Hutter, 468 6th Street, Brooklyn 15, New York.

FIVE Different Sets French Colonies, 10c with Approvals. Banner, Box 65, Park Forest, Illinois.

ISRAEL, Miniature sheet, Commemoratives, Free! Approvals. Knott, 434 East 76th, New York 21, N. Y.

FIVE Mint United Nations with Approvals 10c. Brinkman, 4241 Live Oak, Arcadia, California.

QUALITY Approvals At 2c Each. Hadrian, 22 East 29th, New York City 16.

BORNEO, Caicos, Falkland, Malta, Seychelles, Free! Fascinating. Inexpensive Approvals Accompany. Marford, Box 48, Queens Village 29, New York.

OLD scarce U. S. seconds on approval. Slightly defective, bargain prices. Hearnfield, Clintonhill Station, Newark 8, N. J.

SPECIAL: 100 Different France 15c with Approvals. Northwest Stamp Service, Dept. F11, Box 37, University Station, Seattle 5, Washington.

FINE Sets, Packets Free to customers. Stamp Farm, Oxford, Wis.

FREE everything Free—Mammoth collection cataloguing $20.00 also 50 valuable complete sets. 54 Gigantic multicolor Commemoratives. All volumes Scott's International Albums, catalogues, even Master Global Albums, Free when you buy our sensational foreign approvals. Don't write unless you intend to buy. Bargain Stamps, Redlands, California.

SCARCE Souvenir Sheet free with approvals. (Foreign.) Variety Stamps, 57-E Circuit, Newton Highlands 61, Mass.

WORLD'S Smallest and strangest stamps only 10c with Approvals. Finney, Box 89, El Monte, California.

66 DIFFERENT British Colonies 5c. Approvals. Casto, Box 357, Dunbar, West Virginia.

WONDERFUL Offer Seven complete mint sets only 10c with approvals. Reich (S26), 1033 Lawrence, Chicago 40.

100 DIFFERENT Austria 10c. Approvals. Irving Aronson, Box F, Newton Centre 59, Massachusetts.

100 DIFFERENT Japan 10c. Approvals. Ray Verhaalen, P.O. Box 415, Huntington Station, L.I., N. Y.

505 DIFFERENT Stamps 35c. Cape of Good Hope triangle commemorative: darkest Africa jungle flower set, multicolored Portuguese West Africa map stamp. Amazing collection 505 stamps, catalogues over $15.00 to approval applicants 35c. Jayne, Box 44-S, Brooklyn 23, N. Y.

100 FOREIGN, 20 U.S. Commemoratives, 10c. Approvals. Weckerling, 1304B Choquette, Austin 5, Texas.

25 LARGE Hungary Pictorials 5c With Approvals. Arrow Stamps, Box 2575, Okla. City 8, Oklahoma.

FREE Sample! Illustrated, informative, interesting. National Stamp News, Anderson, South Carolina.

SOUVENIR Sheet Czechoslovakia 1937 10c With Approvals. Kingman Specialties, 30 Empire Street, Yonkers 4, New York.

STAMP Finder, World Map and Encyclopedia of stamp issuing countries only 5c. Approvals. Goliath Company, Bethlehem K2, New Hampshire.

123 DIFFERENT 10c including African Queens, Approvals. Krehl, 1708-S Nebraska, Orlando, Florida.

ONE Pound U.S. Stamp Mixture $1.00. Robert Belsheim, Box 7353, Philadelphia 1.

GIANT Approvals, Thousands Different 1c and 2c each. Wahl's Stamp Exchange, 7008K Farragut, Chicago 31, Ill.

14,000 DIFFERENT! Fascinating new Club Plan systematically builds your collection. Only 50c weekly. Details free. L. G. Ware, Stepney 70, Conn.

U.S. COMMEMORATIVES, Beautiful Colonials, Airmails, Topicals 3c with approvals listing. Bristolt, Canton Center, Connecticut.

1840 GREAT Britain Penny Black. Catalogues $11.00. Special $1.00. Approvals. Brooks, 2323P Avenue X, Brooklyn 35, New York.

35 U.S. or Foreign 5c. GSAC, 30th & Governor Printz, Wilmington 2, Delaware.

ASTONISHING Mint Collection Free, introducing approvals. Philatelic Center, Pennington, New Jersey.

50 BETTER pictorials, airmails, colonies, 10c with approvals. Stalder, 2309 Lamee, Jacksonville 7, Florida.

SUPERB Approvals. Stamps ½ to ⅛ catalog. P. G. Beals, 8 Beacon St., Boston, Mass.

FREE!! 50 Different Portuguese, Colorful, Inexpensive Approvals. Elkhart, Box 33, Elkhart, Indiana.

CANADA, 100 different 35c with bargain approvals. K. S. Holmes, London, Canada.

CANADA: U.P.U. set, mint 25c with attractive approvals. Rheaume, 6591 11th Ave., Montreal, Canada.

PENNY Approvals jammed with Bargains. For better values, try Putnam Stamp Company, Mahopac, New York.

EXCITING "Strange countries" packet. Free with approvals! Saxon, Orange, California.

FREE! 12 Different Topicals!! Worldwide Approvals. Prime, Box 562, San Leandro, California.

POPULAR SCIENCE OPPORTUNITIES

FINLAND 95 different 25c with approvals. Gandey Company, Shore Acres, N. J.

U.S. Commemoratives: 140 Different $1; 200 Different $2. Moseley, 6 Hanley Downs, St. Louis 17, Missouri.

SELECT U.S. on approval. Mint, used. Kingsbury Stamps, Fairfax, Vermont.

PROTECT Blocks with P.M.'s. Samples. Edwin's, Box 796, Rockford, Illinois.

FREE Offer with Purchase. Approvals by Country and General. P & H Stamps, P.O. Box 8598, Los Angeles 8, Calif.

1,000 DIFFERENT $1.00. Catalog Value $25.00. No Approvals. Scott's 1958 Catalogs sold. Stamps, Box 333, Staten Island 1, N. Y.

FREE! Beautiful French Pictorial Collection. Sent with Interesting Approvals. Vulcan, Box 9053, Birmingham 9, Alabama.

25 DIFFERENT Commemoratives 1893 up 10c. U.S. Approvals. K & B, Box 70, Brooklyn 23, New York.

60 DIFFERENT U. S., including 30 Commemoratives 25c. No approvals. Seidenberg, Appleton, Wisconsin.

FREE ten mint British Colonies given approval applicants. Tropicana, Box 624-S, Oakland Park, Florida.

MAYFLOWER II Cover, flag stamp, Plymouth, Thanksgiving Day, $1.00 each. Mayflower II Box 333, Staten Island 1, N. Y.

10 DIFFERENT Animals Free; Bargain Approvals. Wilber, R.D. 7, Box 332, Glenridge Road, Schenectady 2, New York.

HAITI, Thailand, Saar, Victoria, Pitcairns, Ghana, Monaco, plus 50 others all free with approvals. Stamp Imports, Peterboro, Ontario, Canada.

TEN Religion Stamps 10c with approvals. D. J. Newell, 503 Cedar St., Iowa Falls, Iowa.

UNITED States Catalog Free! Bailey Stamps, 45 Bromfield, Boston 8, Massachusetts.

THAILAND, Congo, Greenland, Ceylon, Triangle, Diamond, Monaco, Princess, many others. 10c with approvals. Mitchell, Box 1503 (Central), Arlington 3, Virginia.

SENSATIONAL assortment old U. S., Famous Americans, Flags, Presidents, Commemoratives, approvals plus premium for 10c handling. Metropolitan Stamps, Box 312PV, Jackson Heights, N. Y.

U. S. Commemoratives, 100 Different Worldwide, 10c. Approvals. May, Box 986-K, Coral Gables 34, Florida.

FREE! 100 British Empire. 10c Handling. Approvals Included. Kensington Stamps, Buffalo 15, N. Y.

FREE! 100 Different Stamps, Beautiful Approvals. Hurry! Extra Bonus Mint Set First 100 Applicants. Jeans Stamps, Dept. PS, 42 Evergreen Road, North Fort Myers, Florida.

TEN cents brings fifty different stamps. Approvals accompany. Brightwood, Box 93, Nashville 1, Tennessee.

U.S. Bargain, 102 Different, including 25 commemoratives, with superior approvals. Stamps, Box 37, Kennebunk, Maine.

LUXEMBOURG, 25 Different 5c. Approvals. Neal, 5950 Tower, Riverside, California.

FREE! Illustrated Prize Catalog of Stamps, Albums, Mixtures, Packets. Adventures, Bucksland, Connecticut.

DARKEST Africa!! Congo, Cameroons, Seychelles, Swaziland, Tanganyika, Urundi, Free!! Fascinating Approvals. Royalton, Box 283, Forest Hills 75, N. Y.

BRITISH Colonies, 100 Different 10c, also Free Albums, Catalogs for Purchasing Approvals. Coast, P.O. 2187M, Santa Ana, California.

EXCHANGE stamps. Send 100-200 different foreign with 15c. Receive different. Patterson, Lancaster 12, New York.

10 CANADA Pictorials Free! Approvals. The Winfield Company, Box 135, Elizabeth, New Jersey.

U.S. approvals. Low prices. Eagle Stamps, Romine Ave., Pittsburgh 26, Penna.

SPECIAL 50 Different Canada, U.S., British, World. All Four Packets $1.00 Postpaid. Petty, 40 Salisbury, Stewart Manor, New York.

"MONACO Nudes" complete 25c. Approvals. Royal Stamp Company, Tamaqua 2, Penna.

1000 FINE Mixed U.S. Stamps 25c. Wright's, Box 1122, Hagerstown, Maryland.

FREE 50 British Colonies to Approval Applicants. Pan-American, Box 24, Coconut Grove, Miami 33, Florida.

MULTICOLOR Liberia set (cat. 1.32) only 25c with approvals. Taconic Stamps, Ancram, New York.

1,000 DIFFERENT worldwide with Approvals. Alfred Jacobsen, Crompond, New York.

1-2c EACH! Thousands of exciting worldwide stamps. Free examination. Cole, Box 223-G, Buffalo 21, N. Y.

VIETNAM, Laos, Syria, Soudan, Mauritania, Fezzan, Free! Exciting, Inexpensive Approvals. R. & R. Stamps, Box 7, Walnut Ridge, Arkansas.

29 ANTIQUES, RELICS & INDIAN GOODS

SCALPING Knife, 3 War Arrowheads $2.00. Catalog Free. Arrowhead, Glenwood, Arkansas.

SELLING 100,000 ancient Arrowheads, Spearheads, Tomahawks, etc. List free. Lear's, Glenwood, Arkansas.

4 SELECTED Arrowheads $1.00. Smith, 841 N. Tacoma, Indianapolis 1, Indiana.

ARROWHEADS from Oregon, four $1.00. Arrowheads, Rt. Three, Box 145, Eugene, Oregon.

"ILLINOIS;—Gesundheit!" . . . For Sale; Hundreds of: Historical Revolutionary, Civil war, Indian Muskets, Carbines, Rifles, Swords, Bayonets, Powder-horns, Bullet Molds, Holsters, Canteens, Kentucky Rifles, Peppperboxes, Dueling Pistols, Stagecoach Guns, 50,000 Collectors Cartridges,—Confederate items, 110,000 Indian Relics, Coins, Agates, Fossils, Mineral Specimen, Arrowheads, Tomahawks, Bannerstones . . . Mounted Birds, Squirrels, Deerheads, Steerhorns, Violin Wood, Bo-wood, Frontiles, Gold Dollars, Illustrated Catelog 35c. Heikeson, Wenona, Illinois.

30 FLINT Arrowheads $5.00. Fine grooved tomahawk $5.00. Spearhead $1.00. Relic list 10c. Stan's, 1054 Lilley, Columbus 6, Ohio.

30 MINERALS & PRECIOUS STONES

GEMCUTTING — Silvercraft magazine. Learn to cut gems, make jewelry. Ads give sources equipment, gems for cutters, collectors. Free literature. Sample copy 25c. Lapidary Journal, Del Mar 3, California.

EARTH Science. Rockhounds National Magazine. Subscription $2.00. Sample 35c. Box 1357-PS, Chicago 90, Ill.

URANIUM Ore Two Types, Taconite with concentrated Pellets, plus Titanium, Five Specimens $1.00. Gemco, Elsner Avenue, Sheboygan, Wisc.

GEMSTONES, thirty, uncut. Ruby, Sapphire, Emerald, etc., $3.50. 50 minerals $5.00. Lists. Reed's, 4930A Palo Alto SE, Albuquerque, New Mexico.

LARGEST gem and mineral magazine tells how to have profitable fun with rocks, gems, jewelry. Monthly. $3.00 year. Sample 25c. Gems & Minerals, Dept. S-11, Mentone, California.

TEN N. Mex. Minerals $1.50, 6 Fluorescents $1.00, Five Crystallized Minerals $1.00, Fools Gold 25c. Hartson, Winston 5, New Mexico.

THIRTY important minerals, mounted. Labeled. Industrial uses included. $1.98. Minerals, Box 10, Piney Creek, North Carolina.

31 HOBBIES, COLLECTING

INVENTING can be an interesting and profitable hobby. Write for complete particulars. Institute of American Inventors, Dept. 30-E, 635-F St., N.W., Washington 4, D. C.

AUTHENTIC Century Old Apothecary Collection Complete. Featured in Newspapers and Magazine Articles. Over 2000 Items. Some Priceless. $25,000. Also Shaving Mug Collection, about 125 Different with 1/3 Rare Occupationals, $2,000. Pictures of either $1.00 each Refunded when Collection Purchased. Each sold as single unit, no Breakdown Sales. John E. Doughty, Snow Hill, Maryland.

NAZI War Items Listing 10c. Kingstone, 920 Third, Seattle 4, Washington.

MILITARY miniatures, U.S. Marines, American Revolution, Civil War, Custer's Cavalry. Illustrated Catalog 35c. Bussler Miniatures, Dept. E, 40 Howe Street, Quincy 69, Mass.

COLLECTORS Matchbook covers. 100 Different unused $1.00. Catalog 25c. Album $3.00. Charles Edelman, 1311-P East 84, Cleveland 3, Ohio.

PROPAGANDA leaflets W.W.II; Sample 25c; Nazi Medals, Badges, sample 50c; Embroidered Swastika and Catalog 25c. Insignia Club, Box 71, Rockaway Park B-94, N. Y.

32 PHOTO FINISHING, PHOTOCOPIES, ETC.

FREE 5x7 introductory enlargement with roll. Finest quality Jumbo dated prints in handy super paks. 8 exposures 35c; 12, 55c. Complete color processing. Big Discounts! Write Globe Photo, Dept. PS, Box 3508, St. Paul, Minnesota.

12 EXPOSURE Rolls, 39c. Jumbo prints. Guaranteed work, one day service. Lincoln Studios, Dept. L, Box 13, Lincoln, Nebraska.

PARTICULAR? 8 Jumbos—40c 12—50c Special; 35mm. 36 exposures $1.25 Intro. Offer. Flash Foto, Box 36H, Brooklyn 4, N. Y.

8-HOUR service on deluxe jumbo prints. 8-Exposure roll developed and 8 jumbo prints 40c. 12 exposure 55c, 16 exposure 70c; 35 mm. 20 exposure 75c, 36 exposure $1.25. Jumbo Deckledge Reprints 4c each. Contact prints made if specified. Bay Photo Service, P. O. Box 210, Oakland, California.

32A COLOR PHOTO FINISHING

KODACHROME Processing—Direct Kodak Service. Ektachrome-Anscochrome Processing $1.00. Write for Prices—National Color Corporation, Box 12155E Northside, Atlanta, Georgia.

33 MOTION PICTURES, SLIDES SOUND EQUIPMENT

MOVIE Camera Film 8 mm roll $1.50. 16mm 100' $3.00. Free processing. Better Films, 742 New Lots, Brooklyn, N. Y.

SAVE 50%! Guaranteed-fresh color, b&w movie film! 8mm, 16mm. Free catalog! Eso-H, 47th Holly, Kansas City 12, Mo.

FREE catalog. Save $$$. Fresh 8mm, 16mm B&W and color film. Home processing equipment. Superior Bulk Film Company, 442-448 No. Wells, Chicago 10.

RECORDERS, HiFi. Free catalogue. Carstone, 215 E. 88 St., NYC 28.

FREE! Blackhawk's big new 1958 sale catalog new and used 16mm., 8mm. movies; 2"x2" color slides; used 16mm. sound projectors! Biggest stock in USA! Cameras, accessories, supplies, too! Blackhawk Films, Davenport 15, Iowa.

TAPE recorders, tape. Unusual values. Free Catalog. Dressner, 69-02 174 Street, Flushing 65, New York.

APPROVALS—See before you buy! Send for sample 50-ft. 8mm film—specify Spectacular, Comedy, Sports, Novelty, etc. Catalog Free—8 and 16mm. Variety Movies, Box 2589-S, Hollywood 28, California.

FREE Catalogues, 5,000 8-16MM Films. International Films, Greenvale, New York.

16MM SOUND Films features, shorts. Bedner, 5300 So. Talman, Chicago.

WORLD'S Largest Film Selection, Features, shorts, new, used. Castle, Official, 8-16mm silent, sound. Free bargain bulletin, specify size. Peerless Camera, 415B Lexington Avenue, New York 17.

MICHIGAN color slides. Free catalog. Hiawatha, Box 56PS, Ypsilanti, Michigan.

8MM Movies 50 ft. $1.00 Special Offer Animals, Cartoons, Travel, Comedies. Send $1.00. Movieland Films Inc., 16121-S Sherman Way, Van Nuys, California.

34 CAMERAS, PHOTO SUPPLIES

FREE! FREE! Send for your new 52 page Photographic Bargain Book. Over 5,000 new and used items at huge savings. For your Free Bargain Book, write to Dept. 4111, Central Camera Co., Chicago 4, Ill.

NEW Argus 300 Projector $44.90, Photo Equipment, Appliances, Discounts to 40%. Free Catalog. Mailers Mart, Box 135-PS2, Pelham, New York.

IMPORTED! High Quality 35mm. camera; f:3.5 coated lens, 1/300 second shutter, leather carrying case. Only $24.95 complete. Free literature. DePir Company, 6862 Trask, Westminster, California.

$5.00 BUILDS Enlarger! Plans $1.00. A & M Industries, Dept. 1A, Norfolk, Va.

35 MUSICAL INSTRUMENTS, SONG WRITERS & RECORDS

WANTED! Poems for musical settings. Write Songwriters' Service, Clifton, N. J.

POEMS Wanted For New Songs. Send Poems. Free Examination. Immediate Consideration. Songcrafters, 2724 Arcade Station, Nashville, Tennessee.

SONGPOEMS and lyrics wanted. Mail to: TinPan Alley, Inc., 1650 Broadway, New York 19, N. Y.

SONGWRITERS! Protect your ideas! Hold all poems, songs! Write for safe, correct procedure! Song Service, Dept. PS, 333 W. 56th, New York 19.

POEMS wanted for new songs. Send poems. Immediate consideration. Crown Music Company, 49-P West 32 Street, New York City.

ACCORDIONS—Direct from importer—save 50% and more! Free trial. Lifetime guarantee. Trades accepted. Free Catalog. Write Accordion Manufacturers Outlet, Dept. 117P, 2003 Chicago, Chicago 22.

SONGWRITERS: Are you trying to get your songs published? Our members achieving success. Free brochure. National Songwriters Guild, 16D Ocean Shore Drive, Ormond Beach, Florida.

NEW Songwriters, Songpoets share $33 million dollars yearly. Any subject songs, poems revised, composed, published, promoted by largest firm. Information, appraisal Free from Nordyke Music Publishers, 6000 Sunset, Hollywood 28PS, California.

ACCORDION Repair Guide $3.00. How To Build an Accordion $5.00. Complete, instructive, illustrated. Money back guarantee. Fischer, Box 402, Bellingham, Wash.

SENSATIONAL New Invention. Play 1,001 professional guitar chords First Day. Chord-O-Matic Dial $1.98. Trebbs Sales, Loraine, Ohio.

COMPLETE Music Service For Amateur Songwriters. Jerry Colonna, Box 888, Burbank, Calif.

ACCORDIONS Wholesale—10 day trial. Free Catalog. American Accordion Center, 5329-PS-11, Belmont, Chicago.

SONGWRITERS, Singers, Combos. Interested in investing $650 to get two numbers on recognized label? Details, sample record, $1.00. Records, 155 W. 46, New York 36.

PHONOGRAPH Records Cheap, postpaid. Catalogue. Paramount, Box 242-S, Williamsport, Pennsylvania.

VALUABLE Phonograph Record Collector Magazine, 20 Pages, 6 Introductory Issues—$1.00. Recordsearch, 131 Hart, Brooklyn 6.

ELECTRIC Guitars, amplifiers, wholesale. Free catalog. Carvin, PSM, Covina, California.

36 RADIO, TELEVISION, SUPPLIES & EQUIPMENT

TV Sets—10 to 21"—$12 up, catalog available others. Surplus Appliances, RFD 2, Abele Park, Putnam Valley, New York.

FREE! Giant Bargain Catalog. Transistor, "Sun" Radios, Kits, Portables, Audio, Electronics, Photographic, Optics, Tools, Household. Write Lektron, 131S Everett Ave., Chelsea, Massachusetts.

BAG of Radio Parts, only 25c. Potential Radio, 446 Crown Street, Brooklyn 35, New York.

CRYSTAL—Radio experimenters. Write to Hulet, 305 Hope, Lakewood, New Jersey.

"33 CRYSTAL Detectors" Handbook—30c. Laboratories, 328-T Fuller, Redwood City, California.

MAKE Long distance crystal radio. Works anywhere. Fully illustrated booklet 25c. Money back guarantee. Francis, Box 5963, Cleveland 1, Ohio.

CRYSTAL Radio kit $1.00, preassembled $1.25, phone $1.75; catalogue. Clearco Crystal Company, 2966 North 4th, Milwaukee 12, Wisconsin.

FREE Test Leads with Capacitest! Save Time! Save Money! Test Condensers and Selenium Rectifiers in the Set! Many other uses. $9.95 complete. Write for Literature: Barjay, 145 West 40 Street, New York 18, N. Y.

TRANSISTOR Kits, parts. Free information. Transit, Box 15-B6, Alden Manor, N. Y.

RECEIVES Broadcast Frequency Without Crystal, Tubes! (Costs under $1.00)—Plans 50c. A & M Industries, Dept. 1A, Norfolk, Va.

37 BUSINESS OPPORTUNITIES

OPERATE profitable mail order business. Write Walter Service, 4159-B East 112th, Cleveland 5, Ohio.

BREED Rare Tropical Fish at home. Earn Big Money! Learn Secrets! Help fill huge demand. Amazing Opportunity! Free Plan. Tropical Fish Breeders, Los Angeles 61, Calif.

BE appointed state notary public now. Write—Stationers, Boerne, Texas.

FIX Typewriters. Inexpensive home course teaches Factory Secrets. Free Booklet. Write, Typewriter, Tarentum 2, Pennsylvania.

WHOLESALE—Get the big merchandise-furniture, appliances, TV's, clothing, tools, auto accessories—most anything. Save half. Literature Free. Associated Wholesalers Service, 1016-C Starr, Burlington, Iowa.

BRUSH Plating Outfits for plating articles in the home and shop. No tanks necessary. Silvering Mirrors spare or full time. Free particulars. Gunmetal Co., Ave. E, Decatur, Illinois.

$70 WEEKLY—Home, spare time. Simplified mail bookkeeping. Immediate income—easy! Auditax, 34757D, Los Angeles 34.

11,000 NEW Prospects Daily. Baby record books, shoes, albums. Sell mailorder. Use our literature. Write: No-Co-Ro, Capitola, California.

GROW Expensive Herbs for Us! Big Profit Home-Business of your own. Year around profitunity. We supply everything necessary! Send for Free Amazing Facts and Revealing Plan. National Herb Exchange, Dept. NR, Gardena, California.

YOUR envelopes addressed accurately, reasonably. Fast service. We have capable addressers in your city. Glenway System, Box 6568, Cleveland 1, Ohio.

MAKE Extra Money, Cash commissions. Everybody buys easy-to-sell Advertising Book Matches. Union label. Big variety—Glamour Girl Scenics, Hillbillies. Powerhouse selling kit Free. Steady repeat business. No experience necessary. Superior Match Company, Dept. PX-1157, 7528 S. Greenwood, Chicago 19.

LEARN Photo-Negative (Portrait) retouching. Men, Women $5 hour possible spare or full time at home. Easy, glamorous. Work for Photographers by mail order. Full details sent Free. Duval, 100 South Vermont, Los Angeles 4.

THEY Hand him $100. Free Packet, "Secret Journal." 919 secrets—plans! Work home. Publico-N3, Oceanside, Calif.

YOUR Own name brand business. No investment; no inventory. Part time or full time. Sell famous brands of appliances, housewares, silverware, radios, vacuum cleaners, lamps, tools, clocks, watches, jewelry, etc., etc., over 1,000 items. Join thousands of successful independent dealers. Send for Free catalog and dealer price list. H. B. Davis Corp., Dept. 14, 145 W. 15 St., New York City.

PRINT for Profit at home. Amazing new method prints colorful posters, banners, greeting cards, glassware—anything. Hundreds at time. No press needed. No art. Fantastic profits! Need representative your area immediately! Free home-business plan. Screen-Print, Dept. NR, Los Angeles 61, California.

PLATE Baby Shoes, jewelry, gifts, bronze and colored pearl. Free booklet. Anderson, 11029 South Vermont, Los Angeles 44.

HOME-Import Mail Order Business—Import profitable items below wholesale. Experience and product investment unnecessary. Full, spare time. Famous world trader guides you. Free list "157 Imports," details. Mellinger, G69B, Los Angeles 24.

ELECTRONIC Plating Equipment, Anodes, Solutions. All types, including New Electroless nickel. Baby Shoe Metallizing Equipment, Supplies. Free Catalog. Hollywood Bronze Supply, Dept. B-1, 1624 East First, Los Angeles 33, California.

"HOW to Start a Business" booklet sent Free! If you Know any Trade—go into business for yourself! Learn the 9 easy steps to follow. We've guided 5,000 others to success. Revealing Free Booklet yours for the asking! Write! National Business Consultant, Office NR, Los Angeles 61, California.

MAIL Order—advertising agency executive reveals sensational no-risk advertising and merchandise methods. Start in office or home—minimum capital—positive profits. Free details. Impact! 3407 Prospect Ave., Dept. 2-11, Cleveland 15, Ohio.

BUY Wholesale! Over 10,000 Nationally Advertised Products. Appliances, Cameras, Sporting Goods, Housewares, Watches, Typewriters, Tools, Clothing, etc. Send Postcard Today. Buy-Rite, Box 258, Hawthorne 5, New Jersey.

FREE Catalog. Contains hundreds of businesses, farms and income properties throughout U.S., Canada. Specify type and location desired. Deal direct with owners. U.I. Buyers Digest, 1608 Hillhurst, Dept. PS-1, Los Angeles 27, Calif.

$320,000.00 MAIL orders passed from my Texas ranch. How I do it. Eveningsnade, Boerne, Texas.

FREE Folder, "How To Make $3,000 Yearly Sparetime, Backyard, Raising Earthworms!" Oakhaven-42, Cedar Hill, Texas.

MINK Raising information free. Complete. Lake Superior Mink Farm, Superior E E5, Wisconsin.

OPERATE restaurant or diner. Free booklet reveals plan. Write Restaurant Arts, 411-BU, Fremont, Ohio.

BUY at Wholesale Prices! Tremendous Savings! Resell to friends, neighbors, everyone at Big Profits. Enormous selection of highly desirable, nationally advertised merchandise—Benrus, Dormeyer, Oster, Cummins, Brook Park, Richelieu, Remington, Ronson, Pepperell, Farberware, Electrical appliances, cookware, housewares, watches, jewelry, rings, dry goods, clothing, luggage, tools, sporting goods, toys, gifts, etc. Free 1958 color catalog showing 1001 in-demand items. Write today. Merit Home Products, Dept. PS-11, 107 Manhattan Avenue, Brooklyn 6, New York.

POPULAR SCIENCE OPPORTUNITIES

MAILMAN brings $150 daily. Tested, authentic, amazing mail order opportunity. Details free. Holiday Publications, 2301 Greysolan Road, Duluth, Minnesota.

GROW a living Miniature Forest or orchard (only inches high) that bears tasty tiny fruit at home. Learn amazing Dwarfing secrets! Sensational Fascinating hobby. $$$$$ Home-business Opportunity. Free Details! Miniature Nurseries, Dept. NR, Gardena, California.

LET Me Sell Your Products Nationally I'll Send You Free Information On How To Establish Sparetime—Full Time Casecraft Business. You Build! We Sell! Everything Supplied. Abarsi, 807-WC Sunset, Los Angeles 12.

UNIQUELY different postcard projects bring avalanche of mail order cash. Powerful advertising copy furnished. Revealing information free. Craft-Horizon, 2694 So. 10th, Fresno 25, California.

BECOME Tax Consultant. Graduates earn to $3,000 every tax season preparing returns evenings. State approved. Union Institute, Hoboken 1E, New Jersey.

WAXES Floors Without "Wax". New invention. No more floor wax to buy. Sensational seller. Samples sent on trial. Kristee 43, Akron, Ohio.

1000 BRED Mink—Booklet, plans 25c. Lake Ontario Ranch, Gravel Road, Webster, N. Y.

VALUABLE Distributorship Throughout United States. With exceptional high rate of earnings. A business established over 20 years with 200,000 users. Investment $8,500—$12,500. Box 1457, 1501 Bway, New York.

CLIP valuable newspaper items. Hundreds worth 25c to $5.00. Steady income. Darco, Box 494, Muncie, Ind.

100% PROFIT. No Investment. Stamp brings details, samples. Miller, Box 584, Brooklyn 1, New York.

FREE Folio "$5,000-$45,000; Unlimited Vacations." No merchandise, equipment. Unknown! Work home—sparetime! Haylings—S-16, Carlsbad, Calif.

MAKE New Greaseless Doughnuts In Kitchen. Sell stores. Free recipes. S. Ray, 3605 South 15th, Minneapolis 7, Minnesota.

VENDING Machines—No Selling. Operate A Route of Coin Machines And Earn Amazing Profits. 32-Page Catalog Free. Parkway Machine Corporation, Dept. 18, 715 Ensor Street, Baltimore 2, Maryland.

NATURAL Molding Rubber; Extra Thick. Free Sample. W. Wooley, 1016-B Donald, Peoria, Illinois.

TO $100.00 weekly, Sparetime, home operated mailorder business. Successful "Beginner's" plan. Everything supplied. Lynn, 10420-C National, Los Angeles 34.

OPPORTUNITY to earn $15,000-$30,000 annually. Franchise protected. Granted on $12,500 basis. Live at home. No merchandise to buy. Selfemployed. One of most exclusive and noncompetitive Businesses in United States and Canada. Send for free explanatory booklet. Harrell and Company, Box 8-D, Louisville, Illinois.

GUARANTEED steady work discount selling. Details catalog 25c. Townsend's, 1018PSO Woodland, Sharon Hill, Pennsylvania.

"MAILORDER Laws and Regulations." $1.00. Explains necessary licenses, different taxes, legal requirements, etc. "Mailorder Rules for Beginners," $1.00 additional. Tasker, 1603 Peach Street, Alexandria, Virginia.

$250 WEEK cleaning venetian blinds. Patented Machinery. Free literature. Robinson, 7213A, Indianapolis 1, Indiana.

WE Pay $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 178, 2954 Admiral Way, Seattle, Wash.

PRECISION Sharpen Scissors, Snips, Pinkers. Using inexpensive outfit. Blackhawk, Sheldahl, Iowa.

YOU can Make Money at home in spare time taking magazine renewal subscriptions. No capital or experience necessary. All supplies furnished. Write Today! McGregor Magazine Agency, Dept. 130, Mount Morris, Illinois.

METALIZE Baby Shoes; Repair Dolls; Rebuild Batteries; Catalogue "75 Ideas" Free. Universal, Box 1076-B, Peoria, Illinois.

FREE Literature—Make Big Money Raising Fishworms and Crickets. Carter Farm, Plains, Ga.

WE Manufacture Leather specialties suitable for direct mail selling also salesmen, jobbers, retailers. Samples $2.00. Paul Lund, Box 756, Elmira, N. Y.

1500 PEOPLE In One State make money at home. Free Information. Mail-Towne, P9 Murray St., New York 7, N. Y.

LIQUID Rubber. Make flexible molds. Free Sample. Chaney, 1907-C East Rd., Jacksonville 11, Fla.

INTERESTED In Mail Order? Investigate Facts Before Plunge. No Plans, No Schemes. Postcard For Information. Fosters, Box 8382-A, Albuquerque, New Mexico.

SELL Books by mail. 400% Profit. Royal, Box 368-M, Cleveland 27, Ohio.

MAKE flexible molds. Cast plaques, figurines. Free sample. Tooker, 1045-A Fairview, Hamilton, Ohio.

START successful mail order business. Proven plans, facts, products. Write Thowe Company, 643 McLaughlin, San Antonio 11, Texas.

HOME Business. Free details. Handmade Figurines, 18724-B Martha, Saratoga, California.

HOW to grow Orchids at home. Profitable, fascinating. Successful home grower shows you how he does it. Free—full details. Orchidland, 100 S. Vermont, Los Angeles 4.

CASH from Sawdust (seventy methods). Tin-cans (thirty methods). Newspapers (eighteen methods). Instructions 50c each. All three $1.00. Charles Company, 12-XBR, Norwood, Ohio.

FREE "Franchise Profit Letter" describes nationwide opportunities. Exclusive distributorships, dealerships, agency operations. Write today. National Franchise Reports, PS-528, 333 North Michigan, Chicago 1.

$60.00 WEEKLY sparetime. Start home Venetian Blind Laundry. Protected Territory. Interesting information free. Burtt, 2434ET, Wichita 13, Kansas.

BIG Multicolor Wholesale Catalog! Housewares, Appliances, clothing, silverware, cookware, luggage, binoculars, radios, phonographs, cameras, recorders, projectors, typewriters, shavers, sporting goods, toys, tools, sewing machines, watches, jewelry. Name brands. Huge discounts. Postcard: Selbyco, Decatur 274, Illinois.

COLORGLAZED Concrete pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leak-sealing. Money-making projects. Booklet, details free. Men only. National Potteries, Grand Rapids, "Minnesota."

CYPRESS Knees $5.00 Dozen. Up. Details. Gipple's Giftwares, DeLeon Springs, Florida.

PLASTERCRAFT molds, liquid rubber, plasters, flocks, candle supplies. Catalog and manual free. Jayhawk Plasters, Blue Rapids, Kansas.

MAKE Your Fortune with Postcards: Amazing Home Work Opportunities. Brings in the Dollars. Free Details. Harvey Sales, 5709 Euclid, Cleveland 3, Ohio.

MAIL Order Operators, Buy Giftwares Cheap from Foreign Firms. List of 100 Worldwide Exporters and their Products. $1.00. Correspond in English. Elkmand, 346 N. Summit, Sioux Falls, South Dakota.

INVISIBLE Reweaving: $5 in one hour possible reweaving burns, tears, mothholes. Spare-Full time. Free Details. Skil-Weave, Dept. C-1311, 335 W. Madison, Chicago 6.

BUY Wholesale! Thousands nationally advertised products at big discounts. "Free Wholesale Plan." United Wholesalers, 1265-H Broadway, New York.

WANTED—Limited number intelligent Men and Women to work at home on exclusive Mail Order Business proposition. No selling—we furnish everything including literature, names, addresses, stock and ship items for you. Free Details. Mail Order Distributors (Franchise Division), Los Angeles 61.

FOUR Color Mail Order Catalogs—Fifty Fast-Selling Items. Orders Filled For You. Big Profits. Sample, Details Free. Associated, Box 53-B Boston 22, Massachusetts.

MANUFACTURE Perfumes—Cosmetics—Cleaners—Polishes—Work Home—Catalogue Free—"International," 6437 Parnell P.S. 117, Chicago 21, Illinois.

"50 NEW Home-Business Ideas" Booklet, sample Free. Spray exotic Velvet-Suede on anything. Flockcraft-NR, Los Angeles 61.

FREE $3.00 merchandise certificate. Send $1.00 now for your catalog. Texas size discounts. Also part time moneymaking opportunities. Specialties Unlimited, 2403A East Lancaster, Fort Worth, Texas.

$250 WEEK reported! Free book "505 Odd, Successful Businesses." Work home! Expect something Odd! Pacific-36C, Oceanside, California.

STOP Wrinkles. Keep Face Youthful. Instruct Others. Mystic Secrets $2. Details Free. Ernelda Gardiner, 330 East 257 St., Euclid 32, Ohio.

CANDIED Popcorn and Potato Chip Equipment. Eakins, Box 933-B7, Springfield, Ohio.

"EVERYBODY Likes Candy." Make professionally home. (Our 45th Year) Ragsdale Candies, East Orange, N. J.

MAKE $46 From Square Foot Plywood; Jigsaw necessary. Free Details. Woodarts, Bridgewater, Mass.

UNUSUAL. "137 Successful Home Business Methods". Service, Box 636PS, Newport News, Virginia.

LIQUID Marble—Brushed! Sprayed! Mold novelties, tile! Particulars free. Marbelizing Service, Edwardsville, Illinois.

PIANO Tuning learned quickly at home. Tremendous field! Musical knowledge unnecessary. Information free. Empire School of Piano Tuning, Champaign, Illinois. (Founded 1935.)

RICH Man's Secret! The amazing "Method" that makes all fortunes. Never fails! Literature free. Industries, 1430W Monroe, Chicago 7, Illinois.

MUSHROOMS Quicker, Easier, Cheaper. Newest Facts Free. Luxorco, 641 South 19th, Newark 3, N. J.

OUR complete plan puts you in business for yourself, part time or full time, manufacturing household necessity used by every housewife. Free details. The Berto Company, 30 Huntington Ave., Boston 16, Mass.

CASH from Sawdust, Newspapers, Tincans, Glass! 135 Methods $1.00. Guaranteed! ABC Publications, Box 849, San Francisco 1-SS, California.

BUY Direct From Factories—Appliances, Cameras, Watches! Free details! Cam Company, 6810PS-20th Ave., Brooklyn 4, New York.

MAKE Big Profits clipping newspaper items for publishers. Instructions explain how. Particulars free. National, 81-N, Knickerbocker Station, New York.

38 MONEYMAKING OPPORTUNITIES

SELL Titania Gems: far more brilliant than diamonds. Catalog 10c. Diamonite, 2420-S 77th, Oakland 5, California.

MAKE $5 Hour sharpening scissors. Details free. Flory, 3741 Rufe Snow, Fort Worth 16, Texas.

BUY Wholesale! 30-80% Discounts! Appliances, Gifts, Typewriters, Tools, Watches, Sporting Goods, Jewelry, Cameras, Housewares, etc. Consolidated Distributors, Clifton 11, New Jersey.

POPULAR SCIENCE OPPORTUNITIES

HOMEWORKERS! Write for exciting details concerning Addressing and Mailing. Temple Co., Muncie 7, Indiana.

FREE Book "505 Odd Successful Businesses." Work Home! Pacific-35c, Oceanside, Calif.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write, Wagoner, P-125 West 86th, New York 24.

MEN-Women! Start Money-Making Plastic Laminating Business at home in spare time. Material that costs 11c brings back $2.58. No canvassing or selling but mail orders bring in $20 a day. Write for full particulars Free. Rush name on postcard to Warner, Room CL-3-L, 1512 Jarvis, Chicago 26, Illinois.

FIVE years ago I had no job and little money. Today I am retired, own a home, car, and bank account. Anyone can do this regardless of age or education. One dollar brings story. Information free. N. Cole, 217 49th Street West, Bradenton, Florida.

$1200.00 MONTHLY Proved! Rid homes, farms, businesses of termites, rodents, pests. New shortcut methods! Learn everything two weeks! Free success plan. A.P.C.A.O., Dept. 2C, 429 South Western, Los Angeles 5, California.

HOTTEST Mail Order Plan Ever! Sell photos, films, art novelties. Huge proven profits! Free Details! A.M.P.R.O., Dept. 2C, 429 South Western, Los Angeles 5, California.

START Big-Pay business at home in spare time. No experience needed to operate little table-top machine for bronzing baby shoes. Make $5.46 profit on every pair. Full particulars free. Send postcard to Mason, 1512 Jarvis, Room CM-3-L, Chicago 26, Illinois.

AMERICA'S largest wholesale supply. Buy, sell. Amazing profits. New free plan. Associated Wholesalers, Box 52-CX, Burlington, Iowa.

MAKE Money Writing Short Paragraphs! No tedious study. I tell you what to write, where and how to sell, and supply list of editors buying from beginners. Many small checks add up quickly. Write to sell, right away. Send for free facts. Benson Barrett, Dept. C-86-K, 7464 Clark, Chicago 26.

IT'S Smart To Shop By Mail. Select gifts of nationally-advertised merchandise from your armchair at low discount prices. Watches, jewelry, appliances, luggage, home furnishings, sporting goods, tools, etc. Write today for big Free Catalog. Midway House, Box 25, Rockford, Illinois.

$100.00 WEEKLY spare room. Raise redworms soilless way. Odorless. Charlie Morgan, Box 116C, Bushnell, Florida.

$1,000.00 MONTHLY for 26 years! Stay home and enjoy life with the most fascinating mailorder business ever conceived. The postman has put over $250,000.00 into one mailbox with this Plan! Learn how you too can start right now. Facts Free! Dixieland Publishers, Asheboro 62, North Carolina.

MEN and women wanted to start home business in spare time with little table-top rubber stamp machine. Easy to earn up to $9.80 an hour without previous experience. Full particulars Free by mail. Send postcard to Roberts, 1512 Jarvis, Room CR-3-L, Chicago 26, Illinois.

FUN projects for big profits! Easy to make Christmas Kits. Corsages, pins, earrings, mantle decorations. Kits complete, ready to assemble. Free 4-color catalog. Holiday Handicrafts Inc., Winsted 13, Connecticut.

WHOLESALE! Genuine Diamonds, Jewelry, only. Distributors, Box 106C, Hudson, New York.

FANTASTIC Profits! Shaving powder, 25c. Adams Soap Mfg., Schodack Landing, New York.

AUTOMATIC Bed warming sheet, you sleep on not under. Beats electric blankets 10 ways, costs half as much. Generous profits. President, Patented Products Corporation, Danville, Ohio.

MAILORDER! Succeed with Profitable, Proven Methods. Work Home! Mahn, Box 427-C, Woodcliff Lake, New Jersey.

BECOME Cloche Perfume Distributor. Selling to Women, churches, clubs, stores. Send only $1.00 for elegant samples and details to start. Cloche Perfumes, Arden, N. C.

SELL books by mail. Directory of wholesale book sources, $1.00. Clemons, Box 187, Sunnyvale, California.

GUARANTEED money maker, work from home, free details. Lifetime P-10, Box 151, Roselle, N. J.

$100.00 WEEKLY Spare Time With A Tape Recorder! Fabulous new business. Entire country wide open! Record weddings, parties, sports events, stereophonic sound, sound-on-sound multiple recordings. Make radio commercials, sound effects. Have fun and make big money in the glamorous business of Tape Recording. Moneymaking Facts Free! Dixieland Publishers, Asheboro 8, North Carolina.

YOUR Own Business—Learn what method will turn your $9.60 into $94.00 or $20.00 into $240.00. Information Free. Pittman's Industries, Box 992-S, Porterville, California.

VENDING Machines—No Selling. Operate A Route of Coin Machines And Earn Amazing Profits. 32-Page Catalog Free. Parkway Machine Corporation, Dept. 19, 715 Ensor Street, Baltimore 2, Maryland.

SPARETIME Repeat Profits Taking Magazine Subscriptions, Special Offers. Cassell Agency, Boynton Beach 7, Florida.

WE Pay $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 179, 2954 Admiral Way, Seattle, Wash.

DOLLARS Every Day! Amazing Magic Mailorder Plan. Setup Free. Miller, Box 588-A, Oshkosh, Wisconsin.

$35.00 WEEKLY addressing envelopes. Instructions $1.00 Refundable. Adservice, Spring Valley, New York.

FREE Literature—Make Big Money Raising Fishworms and Crickets. Carter Farm-11, Plains, Ga.

$60.00 WEEKLY sparetime. Start home Venetian Blind Laundry. Protected Territory. Interesting information free. Burtt, 2434EU, Wichita 13, Kansas.

AMAZING successes through franchises! Become exclusive franchise holder your territory. Information rushed. National Franchise Reports PS-528, 333 North Michigan, Chicago 1.

$20.00-$50.00 WEEKLY from sparetime mimeographing. Write; Mozelle Mimeo, Bonham, Texas.

NEW Battery Operated Vacuum Cleaner picks up dust in removable dust bag. Make Big Profits Demonstrating this Handy Invention. Cleans Venetian Blinds, Clothes, Drapes. Send $2.50 for Sample or $25.20 doz. PPD. Less Batteries. Retails for $3.49. Send Cash, Checks, Money Orders to Shale Distributors, 4630 Woodley Ave., Encino, California.

START profitable home business. Variety described. Full instructions each. $1.00. Topp, Box 993, Fern Park, Fla.

LEARN high paying newspaper trade at home. Write to Thomas Smith, P.O. Box S-3987, Sarasota, Florida.

BUY Wholesale! Save 66 2/3%! 100,000 Name Brand Appliances, Housewares, Clothing, Furniture, Tools, Sporting Goods, —Everything! Free Catalogs, Illustrations! National Buyers Service, Box 3338FB, San Francisco.

MAKE Money Addressing! Literature explaining, free. Cove, Box 768-P, Largo, Florida.

TEN Proven Ways to Make Money in Your Spare Time. Send $1.00 to: Homework, 4505 Harriet Ave. So., Minneapolis 9, Minn.

SELL to all Types of Business by Mail. Vincent Hopwood, 1103 East Gambier, Mt. Vernon, Ohio.

EASY home moneymaking business. Full or sparetime. Complete plan $1.00. Moneyback guarantee. Jaydee, 14014½ E. Merced, Baldwin Park, Calif.

$15,000. PROFIT in One Year Possible, on $5.00 cash and just 3 hours attention weekly! Experience unnecessary! Fabulous but true! Proof, complete detailed Plan, only $1.00—satisfaction or refund! Columbia Enterprises, 8203-S Grubb Road, Silver Spring, Maryland.

OPERATE Profitable home business with our help. Novelties, Box 10057, Tampa 9, Florida.

SELL "Supervite" Super-Potency Food Supplements. Vitamins, 5522½ Hollywood, Los Angeles 28.

VALUABLE Franchise Available. Investment. Experience Unnecessary. Earnings unlimited. 200X Allen St., New York.

FREE Folio "$5,000-$45,000; Unlimited Vacations." No merchandise. Unknown! Work home—sparetime! Haylings—S16, Carlsbad, Calif.

MAKE money in Home woodworking—everyone a prospective customer. Send dollar for sample and instructions. Carmercraft, P.O. Box 66-B, Xenia, Ohio.

"55 Ideas For Making Money At Home." $2.00. Aetna Enterprises, 4604—2 Ave., North, Great Falls, Montana.

PREPARE Income Tax Returns at home spare time, $5.00—$10.00 per hour. Simplified instructions. Its a honey. Particulars free. Reynard, Box 1265-G, Peoria, Ill.

GET on Government Surplus Sales Mailing Lists. You Bid Direct. Procedure and Depot List $1.00. Prompt First Class Return. Harkin, Box 381, Lawndale, California.

MAKE Money Clipping Newspaper Items For Publishers! Complete plan. News-raft, PS-983-E. Main, Columbus 5, Ohio.

BOOKS Bought! Appraisal forms 40c (refundable). Wat, Box 128, Breckaville, Ohio.

MUSHROOMS Quicker, Easier, Cheaper. Newest Facts Free. Luxorco, 641 South 19th, Newark 3, N. J.

$30-$60 WEEKLY sparetime, addressing envelopes at home. Instructions $1, refundable. Reiss, 210 5 Ave., Suite 1102-DE, New York 10.

MAKE $200.00 Monthly Spare Time With Jigsaw. Free Details. Elkman, 346 N. Summit, Sioux Falls, S. Dak.

MONEY Plans! "Secret Journal." Grandpa, two daughters—made $2,500 first month! Work home. Publico-N2, Oceanside, California.

MAKE Sparetime Dollars. Work Home. Industries, 526 S. Western, Chicago 12.

"WHAT'S New" Lists Newest Products! Details Free. Mailtrader, Box 643, Ann Arbor, Michigan.

100% PROFIT, Mailorder sales. Literature furnished. Laircraft, Box G-5008, Detroit 35, Michigan.

WILL Sell Anything Handmade On Consignment. Bonito, 416 Date, Alhambra, Calif.

MAKE Big Profits clipping newspaper items for publishers. Instructions explain how. Particulars free. National 81-N, Knickerbocker Station, New York.

QUICK Money, home, making cheap Xmas tree stands. Plans $2.00. C. Minor, Box 78382, Los Angeles 16, California.

$2000 IN 3 Weeks. Investment without risk. Millions available. Send $1 details. Stark, 14321 Wentworth, Chicago 27.

38A BUY IT WHOLESALE

BUY Wholesale! Over 10,000 Nationally Advertised Products. Appliances, Cameras, Sporting Goods, Housewares, Watches, Typewriters, Tools, Clothing, etc. Send Postcard Today. Buy-Rite, Box 258, Hawthorne 8, New Jersey.

BUY Wholesale Nationally Advertised General Merchandise. Appliances, Sporting Goods, Jewelry, Watches, Tools, Radios, Cameras, Typewriters. 106 Page Catalog and 24 Page Christmas Supplement $1. Refundable First Order. Keystone Industries, 1311 Morse Avenue, Chicago, Illinois.

SAVE to 80%, 800,000 items. Clothing, groceries, fuel, car coats. Free details. Holiday Publications, 2301 Greysolan Road, Duluth, Minnesota.

BUY Wholesale! Appliances, Typewriters, Tools, Watches, Housewares, etc. Savings to 60%. Send $1.00 for Catalog to Catalog Discounts, 2082 Deerfield Road, Highland Park, Illinois.

AUCTION-By-Mail, Government Surplus, Diversified Merchandise, Sealed Bid Subscription Service $3.00 year. Save money, make money, information 25c. Auction-By-Mail, Box 522, Niagara Falls, N. Y.

BIG Multicolor Wholesale Catalog! Housewares, appliances, clothing, silverware, cookware, luggage, binoculars, radios, phonographs, cameras, recorders, projectors, typewriters, shavers, sporting goods, toys, tools, sewing machines, watches, jewelry. Name brands. Huge discounts. Postcard: Selbyco, Decatur 174, Illinois.

WHOLESALE! Clothing, appliances, jewelry, furniture, etc. "Free Wholesale Plan." United Wholesalers, 1265-P Broadway, New York.

AT Last! A Real Man's Watch! A fine jeweled Swiss precision made anti-magnetic, diamond tooled, electronically timed with metal expansion bracelet, a $50.00 value, 2-year guarantee, only $10.95. Also for Women, same exquisite qualities, $12.95. A perfect gift for all occasions. Send check or money order. C.O.D. orders send $2.00 deposit. We pay postage on prepaid orders. Arnold Enterprises, 176 Worcester Turnpike, Wellesley Hills 81, Mass.

ELECTRIC Guitars, amplifiers, wholesale. Free catalog. Carvin, PSW, Covina, California.

124-PAGE Wholesale Catalog! Discounts to 80%! BTS Products, Oakland 217-20, New Jersey.

FANTABULOUS discounts to 81%. Housewares, jewelry, appliances, etc. Plus exclusive Home Mail Order opportunity—No cash outlay needed. $1.00 P.P.—refundable. Fords, 1636-21st, Ogden, Utah.

39 FORMULAS, PLANS, ETC.

FORMULAS—All kinds. Latest products. Literature free. Kemico, Park Ridge 15, Ill.

137 BUSINESS Plans; 225 Formulas. Mesloh, Box 421, Hempstead, New York.

LATE Modern Manufacturing Formulas List Free. Chemical Service, Martville, New York.

LARGE Formula Catalog Free. Analysis Reasonable. Western Chemical, Salem, Oregon.

MODERN Formulas for the best in fast selling, big profit products. Eye-opening literature free! Miller, Chemist, 1517-S, Tampa, Florida.

MONEYMAKING Formulas. Literature free. Joseph Watson, Box 4775, Kansas City 9, Missouri.

40 PLASTICS

LEARN Plastics Fabrication For spare time income. Low cost home training now available. Write for free booklet. Interstate Training Service, Dept. D-2, Portland 13, Oregon.

NEW Liquid Casting Plastic, clear, colors. Embed real flowers, coins, photos. New Manual shows fine thing you can make at home and sell at big profits. Send 25c. Castolite, Dept. M-102, Woodstock, Illinois.

LAMINATING Supplies. Price List Free. Solomson, 45 Cornhill, Boston 8, Mass.

PLEXIGLAS — Any thickness — Clear —Colors—Cut to size—Clear Rods—Tubing. McClarin Plastics, P.O. Box 168B, Hanover, Pennsylvania.

PLASTIC Casting and Mold Supplies—Catalog includes Instruction in Mold Construction, Casting, Manufacturing Methods, Liquid Glass, Steel, Rubber. Send 25c. GEL Box 261, Union, N. J.

NO Investment—We Furnish Machinery and Supplies for Plastic Sealing Business —Percentage Basis—Limited Offer—Write Today. Seal In Plastic Co., 2433 Fletcher Drive, Los Angeles 39, Calif.

LEARN Plastic Laminating. Earn $$$ preserving photographs, certificates, news items, passes, etc. Illustrated kit with complete instructions and 240 square inches of material $1.00. Order Now. G & H Sales, 607 McCarroll, Pensacola, Florida.

41 CHEMISTRY & PHYSICS

ILLUSTRATED Catalog: Chemistry, mineralogy, biology 20c. Tracey Laboratories, Evanston, Illinois.

CHEMICALS, highest quality, in small quantities; chemistry sets, apparatus and laboratory supplies, 25th year. Catalog 25c. John H. Winn Co. Inc., 124P West 23 Street, New York 11, N. Y.

AMAZING New Book of Science. Experiments, Formulas, and Catalog of Laboratory supplies. Only 25c. National Scientific Co., Dept. PS-11, 500 West Road, Lombard, Illinois.

EXPERIMENTERS: Bargains Catalog, 25c (Refundable). Hagenow Laboratories, 2414 Clarks, Manitowoc, Wisconsin.

CHEMICALS and apparatus for industrial, analytical and private laboratories. Catalog 25c. Dept. M-26, Biological Supply Co., 1176 Mt. Hope Ave., Rochester 20, N.Y.

CHEMISTRY-Science magazines. Literature free. "Lankton," Box 5126-D10, Lansing 6, Mich.

CHEMISTRY - Science - Mathematics Booklets! Free Lists. Franks, 3121 South Racine, Chicago 8.

CHEMICALS, Supplies Catalog, 25c. Laboratory Sales, Box 161-B, Brighton, Mass.

42 HELP WANTED REPORTS

SMALL Southwest College with excellent research facilities is seeking the services of experienced instrument makers. Beginning salary range $5000 to $6000 per annum depending upon qualifications. Excellent climate for health seekers, outdoor recreation, including hunting, fishing, swimming, and golf. Direct letter of application to Arthur P. Stanton, Personnel Manager, Campus Station, Socorro, New Mexico, describing qualifications and salary requirements. Include recent photograph.

BOOMING Venezuela—Only hours from the States. New data regarding Jobs, Opportunities, Conditions, etc. Salaries to $1650 monthly US tax exempt. Bonuses, Living Allowances extra. First-hand info direct $2.00 ($2.35 Air Mailed). Checks or Money Orders only. Paul B. Smith, Apartado 172, Maracaibo, LaSalina, Venezuela.

WANT work in Washington? Particulars free. Henderson, 170 Temple Village, Alexandria, Virginia.

FREE Information: Earn High pay. All trades. Foreign and USA Job Opportunities. Travel paid. Applications, Write Dept. 61L, National Employment Information, 1020 Broad, Newark, N. J.

COPYRIGHTED Reports on best paying jobs with travel, adventure, promotions. Construction, aviation, shipping, laborers, clerical, trades, supervisory, factory, unusual opportunities. Many types of work. Skilled and unskilled. Foreign and stateside openings for men and women. Only $2.00 ($2.25 airmail) including registration-advisory service. Satisfaction guaranteed. Included absolutely free: Special reports on Alaska, Spanish airbase construction, South American opportunities and husband-wife foreign jobs. Research Services, Suite 514-PSS, Meramec Building, St. Louis 5, Missouri.

JOBS Overseas and USA. Application Blank and Listings $1.00. Job Application Service, 1961 Government Street, Baton Rouge 6, Louisiana.

RESORT Jobs—Miami Beach, Palm Beach Area. Waiters, Waitresses, Bellhops, Lifeguards, Cabaña Boys, Secretaries, Office Workers, Kitchen Help—White and Colored. $1.00 for list. Box 425, Oakland Park, Fla.

FOREIGN, Alaskan, USA jobs!! To $1500 Monthly! Million Americans, Employed Overseas. Copyrighted Reports. Who to contact for highest paying jobs. Laborers—Trades—Truck Drivers—Office—Engineers—Many Others. 52 Countries—St. Lawrence Project, Spain, Latin America, Northern Projects, Europe. Year Registration—Advisory Service—Application forms. Unconditional Money-back guarantee! $2.00 (Airmailed $2.25) (COD's Accepted). International Reporter, St. Louis 1-SZ, Missouri.

SOUTHERN California's booming. Jobs aplenty. Classified ads. $1.00. Mathers, 463 Bristol, Cardiff, Calif.

BOSTON Jobs, Housing Information $1.00. Jackson, 1999 Commonwealth, Brighton, Massachusetts.

TRUCK Drivers, Laborers, helpers, Craftsmen over $1000.00 monthly, for northern bases. Also information, South America, Spain, Europe, Alaska, etc. Foreign Job listing send $1.00. Universal, 1111 Commerce Bldg., St. Paul, Minn.

JOBS Overseas. Janecek Development Co., 109 Hub Station, New York 55, New York.

PHOENIX, Tucson, Opportunities. Classified mailed $1.00 each. Huddleston, 6572 Calle Cappela, Tucson, Arizona.

JOBS!! United States, Overseas, South America, many others. High Pay! Overtime work! Opportunities for skilled and unskilled. Laborers, factory, truck drivers, office. Latest monthly reports, application forms. How-When-When to contact. Also Oil, Aviation and Steamship contacts. Guaranteed Satisfaction or money refunded! One year registration-advisory service. Reports mailed same day order received. Order C.O.D. or send $2.00 ($2.25 air-mail, special delivery). Includes free bonus report "Jobs on Ships." Midwestern Services, Box 124, St. Louis 5, Missouri.

COMING To California? Choice listings of jobs, housing, business opportunities. 15 Page Booklet+free gift. Chesleys, 3977½ Texas Street, San Diego 4, California.

FLORIDA'S booming. Hundreds of jobs. Statewide opportunity analysis, job plan, contact list airmailed $2.00. Sun-Glo Service Bureau, Perry 13, Florida.

WANTED! 1000 Direct Salesmen. Write George Lucas, Bellevue 10, Washington.

AMERICAN, Overseas Jobs, High Pay. Men, Women, transportation paid. Free Information, Transworld, 200H, West 34 Street, New York 1.

MIAMI, Florida—Thousands of New Jobs. Complete want ad columns $1.00. Robey, Box 671, South Miami 43, Florida.

FREE Application Blanks. Send stamped envelope. Job Application Service, 1961 Government Street, Baton Rouge 6, Louisiana.

43 AGENTS WANTED

YOUR own business—Suits $1.50; Overcoats 65c; Mackinaws 35c; Shoes 12½c; Ladies' Coats 30c; Dresses 15c; Enormous profits. Catalog Free. Nathan Portnoy Associates, 605-J West 12th Place, Chicago 7.

AGENTS—300% profit selling genuine gold window letters; stores and offices. Free samples. Metallic Sign Letter Co., 1217-E West Newport, Chicago.

START Your Own Business On Credit. Your own boss. 1527 Dealers sold $5,000 to $32,000 in 1956. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant profitable business backed by world-wide industry. Write Rawleigh's, Dept. K-U-PSC, Freeport, Illinois.

NEW Jobs open in selling! Send name, address for five free issues of Opportunity Magazine's money-making guide, listing hundreds of companies who'll pay you well, full or part-time. No experience needed. Opportunity, 850 N. Dearborn, Dept. 18, Chicago, Illinois.

EVERY man a prospect. Request free sales kit showing line of belt buckles, individualized with customer's name and emblems also cap badges for trucking, bus, taxi, police, firemen. Choice 3000 emblems. Hook-Fast, Box 1425PS, Providence, Rhode Island.

POPULAR SCIENCE OPPORTUNITIES

GOLD or Silver letters, numbers. Windows, Doors, Trucks 1" to 6". 500% Profits—Free Samples. Atlas-U, 544 West 79th, Chicago 20.

$1,000.00 A month for making dramatic 3-second demonstration of amazing lightweight Presto Fire Extinguisher. New chemical used by airforce snuffs out fires instantly. Only $4.95. Terrific commissions. Millions want it. Free Kit. Merlite, 114 E. 32nd, Dept. P-62C, New York 16.

TREMENDOUS profits! Every man, woman and child a customer. Suits $1.50, Pants 35c, Dresses 20c, Shoes 20c. Operate from store, home, car. Free catalog. Superior, 1250-B Jefferson, Chicago 7.

MONEY-Making Opportunity! Take big profit orders for world famous Patented Varieties Fruit Trees. Also Flowering Shrubs, Roses, Vines. Big Sales outfit Free. Stark Bro's, Desk 30158, Louisiana, Missouri.

60% PROFIT On Cosmetics—Famous nationally advertised Hollywood Cosmetics pay 60%! Make $25-day up! Hire others. For free samples, details, write Studio Girl, Glendale, California, Dept. 11711G.

REAL Diamond Rings. Nationally advertised. Sell direct. Make big middleman's profit. No investment. Experience unnecessary. Free catalog, details. Gleamlight, 107R North Columbus, Mount Vernon, New York.

"FOG-Stop" Windshield Cloth. Instantly removes blurry Mist, Frost, Sleet, Snow. Stops windshield fogging. Samples sent on trial. Kristee 70, Akron, Ohio.

MEN—Women Agents: Sensational new moneymakers — Beautifully hand-painted plastic personalized photo enlargements, compacts, rings, bracelets, lockets, etc. Simply take orders, pocket 40% commission—we deliver and collect. Sales outfit free. Novelco, 3343 North Avenue, Chicago 47.

WILL you wear new suits and topcoats without one penny cost and agree to show them to friends? You can make up to $30.00 in a day even in spare time, without canvassing. Pioneer Tailoring Co., Congress & Throop Sts., Dept. R-1226, Chicago 7, Illinois.

FREE Sample! Beautiful Feather Pictures. Sylvial, Apartado 9036, Mexico 1, D. F.

MAKE money selling outstanding line of regular ties, square ends, reversibles, feather, pleated, bows, knitted kerchief sets, mufflers. Free Catalog. Philip's Neckwear, 20 West 22nd, Dept. 416, New York 10.

SEEKING New Products? Get my outfit 47 money-making specialties. Latest conveniences for home, car. Send no money. Just your name. Kristee 72, Akron, Ohio.

BEAUTIFUL Feather Pictures! Free Details, Sample 20c Stamps. Apartado 1668, Mexico 1, D. F.

YOU can Make Money at home in spare time taking magazine renewal subscriptions. No capital or experience necessary. All supplies furnished. Write Today! McGregor Magazine Agency, Dept. 120, Mount Morris, Illinois.

BUSINESS of your own. Earning potential as high as $40,000 annually. Issued on $12,500 base. No merchandise to buy. Send for free explanatory booklet. Harrell & Company, Box 8-DD, Louisville, Ill.

START Your Own Business with Rolit Knife sharpener. Sells easily to stores, homes . . . full or part-time. High profits, easy to use, safe, effective, guaranteed. Territories protected. Free Profit File Outline. Alden Speare's Sons Co., Dept. 117, 134 Sixth Street, Cambridge, Mass.

EASY handwork makes fast-selling articles. Sample free. Sunmade Company, Brockton 64, Massachusetts.

WHOLESALE catalog, Clothing, linens, housewares. Write Bostonian Distributors, 14-A Dock Sq., Boston 8, Massachusetts.

BIG Profits, selling ties ($2.00 value), $6.50 dozen. Free catalog. Empire Cravats, 656-PS Broadway, New York 12.

$1.00 PROFIT selling $2.95 photo enlargement offer. Allen Studio, Reigler Bldg., Little Rock, Arkansas.

BATTERY Chargers, quality line. Good sideline, mail order. Free information. Krest Products, 1303 Jackson, Chicago, Illinois.

BUY 800,000 articles direct from manufacturers the world over at lowest prices. Make up to 1000% profit! Free Literature. Glass, Ellwood City 11, Pa.

MILLIONS Awaiting. Amazing Burn Treatment. 98c Unit Free. Send 30c Handling Charge. P.O. Box 203, South Salt Lake 15, Utah.

SNAPPY Xmas Cards for Men 3 Samples 25c. Good Seller Real Fun. Multi-Mailers, Box 152, Jackson, Mich.

200 COMBS—plastic container $3.00. "Komicards" 36 different $2.40. Burke Associates, Manchester 2, Mass.

SCHOOL Seniors. Be Popular With Classmates. Have Spending Money Galore. Details Free. Craftcards, Box 235-M, Pittsburgh 19, Penna.

FREE — Unique Advertising Specialty Line. Exceptional commissions—easy sales. Allied Business Aids, 11PS, 1133 Broadway, New York 10.

EARN $10,000 Yearly—only two sales daily. World's Best Seller, The Holy Bible (Illustrated) Protestant or Catholic. Margareta's, P.O. Box 92, Hazelton 6, Pa.

44 HIGH-GRADE SALESMEN

MAKE Extra Money. Cash commissions. Everybody buys easy-to-sell Advertising Book Matches. Union Label. Big variety—Glamour Girls, Scenics, Hillbillies, Powerhouse selling kit. Free. Steady repeat business. No experience necessary. Superior Match Company, Dept. P-1157, 7528 S. Greenwood, Chicago 19.

$1,000.00 A month for making dramatic 3-second demonstration of amazing lightweight Presto Fire Extinguisher. New chemical used by airforce snuffs out fires instantly. Only $4.95. Terrific commissions. Millions want it. Free Kit. Merlite, 114 E. 32nd, Dept. P-62C, New York 16.

AD Matches! Sell amazing designs—10, 20, 30, 40, and 240-light book matches. Bigger spot cash commissions; every business a prospect. Low prices for high quality. Repeats. Start without experience; men, women; full, part-time. Buy nothing. Sales kit furnished. Match Corp., Dept. PS-91, Chicago 32, Illinois.

BIG Moneymaking Opportunity. Exclusive line uniforms, jackets, pants, shirts, coveralls, sportwear. Advertising embroidered. Every business prospect. Get Selling Outfit Free! Master Co., Dept. D-13, Ligonier, Indiana.

BIG Profits in your own "Shoe Store Business"! Free information. Mason Shoe Manufacturing Co., Chippewa Falls 17, Wisconsin.

AMAZING Guaranteed Battery Reviver. Renews old batteries, sample $1.00. Free details. Ohkay Products, 2525 Frankford Ave., Philadelphia 25, Pa.

45 EDUCATIONAL & INSTRUCTION

USED Correspondence Courses and Books sold and rented. Money back guarantee. Catalog free. (Courses Bought.) Lee Mountain, Pisgah, Alabama.

BE a Real Estate Broker. Study at Home. Write for Free book today. GI approved. Weaver School of Real Estate, 2018R Grand, Kansas City, Mo.

COMPLETE Your High School at home in spare time with 60-year-old school. Texts furnished. No classes. Diploma. Information booklet free. American School, Dept. X846, Drexel at 58th, Chicago 37, Illinois.

STUDY For Doctor's degree of Psychology, Metaphysics and Divinity. Correspondence courses only. College of Divine Metaphysics, Dept. P-8, 2811 North Illinois, Indianapolis 8, Ind.

EARN While You Learn Auto and Diesel Mechanics. Master this top paying trade. Many graduates earn $100 a week and up. Approved for Korean veterans. For free information write Dept. No. 262, Nashville Auto-Diesel College, Nashville 3, Tenn.

OWN Collection agency office. Pays big. Free details. Franklin Credit, Roanoke 7, Virginia.

HIGH School diploma at home. Licensed teachers. Approved materials. Southern States Academy, Box 5344-PX, Station E, Atlanta, Georgia.

WANT a Diesel Job? New Opportunities to increase income. Higher Pay, More Money. We can help you Qualify. Tools Shop method home training. Write today! Diesel, Tractor, Heavy Equipment Division. Interstate Training Service, Dept. B-2, Portland 13, Oregon.

QUALIFY for college equivalence degrees by examination. No courses. Increase opportunities for promotion, better pay. Approved by employers and educators. Cramwell Research Institute, Adams 7, Mass.

PIANO Tuning pays. Big money in spare time. Learn at home in 30 days. No musical knowledge necessary. Phonograph, records, tools and instructions furnished. Personal instructions available. Free catalog. Capital Tuning School, 16 Southwest Second, Fort Lauderdale, Florida.

ENGINEERING Degrees earned through Home Study. Pacific International University, 5719-A Santa Monica Boulevard, Hollywood 38, California.

LEARN While Asleep! Details Free. Research Association, Box 610-K, Omaha.

BOOKKEEPERS! Increase your earnings! Operate your own simplified "Dollar-A-Week" Bookkeeping and Tax Service. Full or spare time. Details Free. No obligation. Ellis, Box 203, Cedar Grove, North Carolina.

$1,000 MONTHLY possible in collection agency business. Free details. Write Cole Associates, Syracuse 2-A, New York.

WELDERS earn big money. Easy to learn Arc—Gas—Automatic Welding. New equipment, low cost training in non-profit school. GI Approved. Free Booklet. Hobart Welding School, Box P-1171, Troy, Ohio.

HIGH School — No Classes. Study at home. Spare Time. Diploma awarded. Write for Free Catalog HBA-72, Wayne School, 2527 Sheffield, Chicago 14, Illinois.

FREE Trial—Complete language course for home study by Linguaphone. The World's Standard Conversational Method. At home, easily, quickly learn to speak French, Spanish, German, Italian, Japanese, Russian, Modern Greek—any of 34 languages. It's like living in another land. Send for Free Book and details of Free Trial. No obligation. Try, don't buy! Linguaphone Institute, T-54-117 Radio City, New York 20.

DRAFTING, Design, Blueprint Reading. Good paying. Easy to learn at home. Minimum age 17. Write Utilities Engineering Institute, Dept. TM-9, 2525 Sheffield, Chicago 14.

MEN wanted age 19 to 45 to train as Draftsmen Designers at home in spare time. Big pay opportunities. Write for Free brochure. American Technical Society, 850 E. 58th St., Dept. PS-1157, Chicago 37, Illinois.

CHARACTER Analysis. Free Information. Deebe Lucas, 2419 Sunset, Los Angeles 26, California.

LEARN "By Ear" with Dormiphone. While you sleep, amazing new scientific invention works for you. Revolutionary Dormiphone tools give you a shortcut to learning languages, correct speech; memorizing facts, figures; ideal for self-improvement, relaxation, habit training. Saves time, effort. So simple, children benefit. Used by educators, psychologists. Write for Free Book. No obligation. Modernophone, Inc., 321-117 Radio City, New York 20.

MATHEMATICS. Correspondence courses. UCSM, 6605 North Thirteenth Street, Philadelphia 26, Pennsylvania.

WE Pay $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 180, 2954 Admiral Way, Seattle, Wash.

POPULAR SCIENCE OPPORTUNITIES

A Dynamic Singing and Speaking Voice can be yours! Self-Training records. Thrilling details! Canfield, 2018-C Fifth Avenue South, Minneapolis 4, Minnesota.

YOU For president of collection agency. We have helped hundreds get their names on office doors. Franklin Credit, Roanoke, Virginia.

HANDWRITING Analysis now accepted in college, business, industry. Our men, women who use grapho analysis spare, full time earning more money, getting prestige, success, happiness. Uncrowded, fascinating field for intelligent men, women anxious to get ahead. We need more members. Investigate this growing field where you give a real service to your fellow men. Opportunities unlimited. Free sample lesson and information to all over 21. Write today! IGAS, 2307 National Station, Dept. 1012, Springfield, Missouri.

"HYPNOSIS Unawares." Influence others while they sleep! Complete instructions by Ph.D.—$5.00. Satisfaction guaranteed. Wade Hampton, 1320 Micheltorena, Los Angeles 26, California.

U.S. Civil Service Tests! Training until appointed. Men-Women, 18 up. Start $224—$377 month. Experience often unnecessary. Free 36-page book shows jobs, salaries, requirements, sample tests, benefits. Prepare Now. Write: Franklin Institute, Dept. P-22, Rochester, New York.

EARN Diplomas, Certificates, Degrees—Specify Interests. Specialty, Box 296, Jacksonville, Illinois.

EARN College Degrees, Correspondence. Metropolitan University, Box 86, Glendale, California.

ANSWERS on History, Geography, Bible etc. or money refunded. Each question $1.00. Jennett Rausch, 2824 S. McClure, Indianapolis 21, Indiana.

USED Correspondence Courses, Bought, Sold, Rented. Free Catalog. Vernon, 624 Mohawk, Rossville, Ga.

EARN Degree. Free bulletin. Homestudy only. Midwestern Bible School, 1060 Broadripple, Indianapolis.

HELP yourself to abundant living. Our courses have aided students to richer, fuller lives. Learn secret of contentment, happiness. Earn degrees PhD, MsD. Write for free book. College of Universal Truth (Correspondence School), 23-K E. Jackson, Chicago.

PHYSICAL Therapy & Massage. We train you at home. Earn Big Profits From Your Own Private Practice or Work With Hospitals and Doctors. Free Catalogue. National Institute, Desk 3, 159 E., Ontario, Chicago 11.

LEARN Real Estate—Study at home. Send for free catalogue. Midwest School of Real Estate, 68 North Chicago Street, Joliet, Illinois.

LEARN Mineralogy At Home. Diploma Course. Fortunes Being Made In Minerals. Free Catalogue. Mineral Science Institute, Desk 3, 159 East Ontario, Chicago 11.

BOOKKEEPERS! Comfortable living for life! Operate your own simplified business analysis, bookkeeping, tax service. Full or spare time. Details free. Vanderdrift, 35A Franklin, East Orange, New Jersey.

LEARN Piano Tuning Easily At Home. Our Graduates lead field. Our 60th year. Free Booklet. Niles Bryant School, Dept. S, 3711 Stockton Blvd., Sacramento 20, California.

LEARN—Teach Physical Training, Body Building. Standard Publications, St. Charles, Illinois.

PRACTICAL suggestions for successful job hunting. 15 page brochure, 25c. Independent Publisher, Box 1108, Atlanta, Georgia.

TRANSFORM yourself via Subconscious Dynamics. Free amazing brochure. Box 847 (A-11), Ocean Park, Calif.

46 CONTESTS

WIN contest money. General Contest Bulletin gives hundreds of tips. Lists current contests, rules. Sample magazine 25c. General Contests, 1609-A East 5th, Duluth, Minnesota.

47 DETECTIVES

DETECTIVE Training. Phillips Secret Service System, 1917-C North Kenneth, Chicago 39, Ill.

LEARN Civil and criminal investigation at home. Earn steady good pay. Institute Applied Science, 1920 Sunnyside, Dept. 338, Chicago 40, Ill.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write Wagoner, P-125 West 86th, New York 24.

BE a detective. Write for free details. State age. National Detective Academy, 535 East 4th Street, Scottsdale, Arizona.

DETECTIVE Training — Spare Time Study Learn Fascinating Profession. Men-Women. Big Money. Become Private Detective. We Help. Laws For 48 States On File. Barnes Detective, Box 490P, Times Square Station, New York 36, New York.

FINGERPRINTING Course $12.00. Diploma Awarded. Details Free. Fingerprinting, Box 185, Fairfield, Ala.

50 BUSINESS SERVICE, INFORMATION, NAME LISTS

5,000 MAIL Order Dealers, $5.00 thousand, gummed labels. Any classifications available. Lists, 2 Madison, Greencastle, Indiana.

52 AUTHORS SERVICE

WRITERS: Book Manuscripts invited for publication on our cooperative plan. Greenwich Book Publishers, (Atten. Mr. Ibsen), 489 Fifth Avenue, New York 17, New York.

WANT Your Book Published? Learn how we publish, advertise, promote, distribute. Many successes. Free booklet PS. Vantage, 120 West 31, New York.

53 ADVERTISING, AGENCIES, ETC., FOR ADVERTISERS

FREE expert assistance for mailorder advertisers. Ratebook leading newspapers, magazines, 10c. Chicago Advertising Agency, Chicago 4.

ADVERTISE: 24 words, 100 Canadian Newspapers, $5.50. Lists Free. Advertising Bureau, 10511-P Springfield, Chicago 43.

54 CARTOONING, SIGN PAINTING, CHALK TALKS

"HOW To Make Money With Simple Cartoons"—A book everyone who likes to draw should have. It is free, no obligation. Simply address: Cartoonists' Exchange, Dept. 1911C, Pleasant Hill, Ohio.

SIGN Painting—Lessons By Mail. Books On Lettering, Gold Leaf, Show Cards, Pictorial. Write Sign Instruction, 4304 Virginia, Kansas City 10, Missouri.

ASK for free facts about our famous cartooning course. Write Manager, Cartoons-Of-The-Month, Roslyn, New York.

CARTOONISTS' Magazine. Lessons, Markets. Free Sample. Cartoonists, 2776 California Court, Lincoln 10, Nebraska.

YOU can Entertain with Chalk Talks. Catalog 10c. Cartoonist Balda, Oshkosh, Wisconsin.

PAINT Signs—Master die cut, outline letter patterns. Complete assortment, 1½" to 12" high, prepaid $2.00. Eyerly, P-583, Newton, Iowa.

55 TYPEWRITERS & OFFICE MACHINES

TYPEWRITER Bargains! All Makes. List free. Woods Typewriters, Bedford, Pennsylvania.

WHOLESALE Catalog 10c! Typewriters! Recorders! Tapes! Radios! Towers, #155, Philadelphia 5.

56 RUBBER STAMPS & OFFICE SUPPLIES

THREE line name and Address. Metal or plastic pocket Case $1.00. Mated Mailers. Post Office Box 494, Buffalo 5, New York.

THREE Lines $1.00. Indexed, Cushioned Mount, Clear Copy Guaranteed. James Moyer, R-1, Pittsburgh 35, Pennsylvania.

3 LINES $1.00. 4 or 5 Lines $1.50. Any Wording. Roughsedge's, 2 Lionel, Clark, New Jersey.

RUBBER STAMPS. Complete Line. Catalog Free. Weymouth Rubber Stamp Co., No. Weymouth 91, Mass.

THREE Line Pocket Stamp with pad $1.00. W. S. Atherton, Box 61, Randolph, Massachusetts.

3, 4, OR 5 Lines 99c. Akers, 214 N. 2nd. St., Ironton, Ohio.

INDEXED Cushioned 3 Lines $1.00, 4 Or 5 Lines $1.50. (Script or Print) Free Stock Stamp Circular. 1 Day Service. Youngers Stamp Shop, Princeton, Iowa.

57 PRINTING, MULTIGRAPHING, ETC.

BUSINESS Printing. Samples. Prices Free. Howprint, 723-W Eunice, Webster Groves 19, Missouri.

FINEST quality printing. Low prices. Free catalog. Hanthorne, 638 Lindell, Fayetteville, Arkansas.

BUSINESS, Personal Printing that Pleases! Low cost! Farrell's, Liberty, New York.

BUSINESS Printing, Rubber Stamps. Free Catalog. Brose, 196 Clerk Street, Jersey City 5, New Jersey.

ADVERTISING Cards—Printed one side, 150 words, 5000 same copy, $30.00. Postpaid. U.S. only. Cards, 2331 Vine, Dept. 15, Cincinnati 19, Ohio.

100 BUSINESS Cards $1.00. Print Shop, 1418 Broadway, Rockford, Illinois.

500—7¾ ENVELOPES $5.95; 500—7½ x 10½ Letterheads $4.95. Postpaid. Floyd Miller, Box 143-S, Dover, N. J.

1000 BUSINESS Cards—$2.95! Samples Free! Morey's, 2497 Roosevelt, Redwood City, California.

OFFSET Printing—$6.50 1000. 8½x11; 24 hour service. National Letters, 251 West 42 St., New York 36, New York.

FREE Catalog Postpaid Printing. D. M. Press, Sebastopol, California.

PERSONAL printing. Free catalog, samples. Johnston, Box 1996, Grand Central Station, New York 17, New York.

POSTCARDS: Postpaid—150 words—1000—$6.00, 500—$4.50. Frank Heyer, 36-11 Raven, Levittown 29, New York.

BUSINESS Cards, Stationery, Labels. Emco, 2864 South Farrell Street, Chicago, Illinois.

SALESMEN, Mail Dealers, Brokers, Terrific wholesale letterhead deal. Plus sales-copy design service, 30 Years Experience. Mprint, Box 748, Dayton 1, Ohio.

BUSINESS Printing Top Quality Bottom Prices. A. Hanlon, Malvern, Pa.

PRINTED Products. Free Catalog. John Peper, Box 822, Chattanooga 1, Tennessee.

500 ¾x2¼ FOUR line gummed stickers 50c. Red Border $1.00. Moritz Printer, Saginaw, Michigan.

TOP quality printing, mimeographing. Free literature. Currier, PSM, New Lebanon Center, New York.

BUSINESS, Personal Printing. Free Samples. Ford, 9900 Parkgate, Cleveland 8, Ohio.

100 LETTERHEADS (8½x11 Watermarked) And 100 Envelopes 6¾, Printed Carefully, $2.00 Postpaid. Race Printing, Hudson, New York.

DISTINCTIVE—Letterheads, Envelopes—Samples Free! Ink-Daubers, 933 Longfellow, Jackson, Mich.

58 PRINTING OUTFITS, SUPPLIES

DO your own printing. Save money. Simple rules. We supply everything. Print for others; good profit. Raised printing like engraving too. Have home shop. Details free. Kelsey Presses, V-8, Meriden, Conn.

POPULAR SCIENCE OPPORTUNITIES

PRINTING Presses, Type Supplies. Lists 3c. Turnbaugh Service, Mechanicsburg, Pa.

RUBBER Stamp making presses, hydraulic operated, electrically heated. Sizes 5"x8", 8"x12", 10"x15" starting outfits. All kinds supplies. Custom Manufacturing, 601 N. Jefferson, Springfield 2, Missouri.

CUTS, Type, Rubber Plates, Stamps. Catalog 25c. Refunded. Gregor's, 79 Cortlandt, Belleville 9, New Jersey.

MAKE Your Own self-molding rubber stamps and printing cuts. Plexirubber, Argyle 2, Wisconsin.

59 PATENT ATTORNEYS

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent. John Randolph, Registered Patent Attorney, 207 Columbian Bldg., Washington 1, D. C.

INVENTION Record form free and "Patent Information Every Inventor Should Have." Carl Miller, Registered Patent Attorney. Woolworth Building, New York.

INVENTORS: Learn how you can protect your invention. A specially prepared booklet "Patent Guide for the Inventor" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be promptly forwarded to you upon request—without obligation. We are registered to practice before the United States Patent Office and are prepared to serve you in the handling of your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys. 72B-K District National Building, Washington, D. C.

C. A. Snow & Co.—S-427, Snow Building, Washington 1, D. C. Registered Patent Attorneys. Write for information.

INVENTORS—If you believe you have an invention, you should find out how to protect it. The firm of McMorrow, Berman & Davidson, with offices in Washington, D.C., is qualified to take the necessary steps for you. Send for copy of our Patent Booklet "How to Protect Your Invention." We will also send you an "Invention Record" form. No obligation. They are yours for the asking. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1434 Victor Building, Washington 1, D. C.

INVENTORS—Take these preliminary steps toward patent protection. Sketch and describe your invention. Sign, date and have this disclosure witnessed by two people who understand your invention. Have us make a preliminary search among U.S. patents already granted for similar types of invention. We report on the probable patentability of your invention and recommend your further course of action. Write for our instructive booklet, "Patent Protection for Inventors" and convenient "Evidence of Invention" disclosure form. Victor J. Evans & Co., 341-M Merlin Building, Washington 6, D. C.

INVENTORS: When you are satisfied that you have invented something of value write me, without obligation, for information as to what steps you should take to secure a Patent. Write Patrick D. Beavers, Registered Patent Atty., 938 Columbian Bldg., Washington 1, D. C.

"INVENTOR'S Guide" and "Record of Invention" free on request. Frank B. Ledermann, 154 Nassau Street, New York City.

60 FOR INVENTORS

INVENTORS, if you have an invention for sale, patented or unpatented, write Institute of American Inventors, Dept. 30A, 635-F St., N.W., Washington 4, D. C.

INVENTORS—Send for free Patent Information book and Inventor's Record. Registered Patent Attorney, Associate Examiner, Patent Office 1922-1929; Patent Attorney & Advisor, Navy Department 1930-1947. Gustave Miller, 117PSI Warner Building, Washington 4, D. C.

INVENTORS—This firm is registered to practice before the United States Patent Office and available to assist you in the preparation and prosecution of your patent application. "Patent Protection for Inventors" booklet containing detailed information and steps to take toward patent protection sent promptly upon request. No obligation. Victor J. Evans & Co., 342-M Merlin Building, Washington 6, D. C.

INVENTION Record form free and "Patent Information Every Inventor Should Have." Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent on your invention. John Randolph, Registered Patent Attorney, 206 Columbian Bldg., Washington 1, D. C.

INVENTORS: Learn how you can protect your invention. A specially prepared booklet "Patent Guide for the Inventor" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be promptly forwarded to you upon request—without obligation. We are registered to practice before the United States Patent Office and are prepared to serve you in the handling of your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys. 72A-K District National Building, Washington, D. C.

FREE Patent Book. Write Blasius, 15-B Park Row, New York City.

INVENTORS—If you believe you have an invention, you should find out how to protect it. The firm of McMorrow, Berman & Davidson with offices in Washington, D.C., is qualified to take the necessary steps for you. Send for copy of our Patent Booklet "How to Protect Your Invention." We will also send you an "Invention Record" form. No obligation. They are yours for the asking. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1433 Victor Building, Washington 1, D.C.

INVENTORS! Have you good patentable ideas? Write Mr. Metzlerr, 11 West 42nd, New York.

PATENT Drawings Your Invention. 25 years experience. Patent Service Associates, Haverhill, New Hampshire.

INVENTORS Don't sell your invention Patented or Unpatented until you receive our offer, write Cowgill, Box 298, Marion, O.

FREE Invention Protection forms. Searches $5.00. Inventors Sales Bureau, Box 4973, Washington 8, D. C.

SOLAR Energy Electro-Chemical Inventors write Associated Inventors, 372 London Street, San Francisco 12, Calif.

PATENT Searches, $5.00, copies included. Free protection forms, 48 hour Service. Write us first! Patent Service Institute, Albee Building, Washington 5, D. C.

SEARCHES—Put your patent searches in the hands of a Registered Patent Attorney or Agent as he qualifies to give a worthwhile patentability report. Record of invention form upon request and information on patent protection. Patrick D. Beavers, Registered Patent Attorney, 939 Columbian Bldg., Washington 1, D. C.

INVENTORS—Have Your Ideas evaluated by patent engineer before wasting money for patents. Confidential! Send copy of drawing, description with $5.00 for each. Inventors Creative Service, 354 South Spring, Los Angeles 13, Calif.

PATENT Searches including copies of nearest patents. $6.00. Reports airmailed within 48 hours. More than 100 registered patent attorneys use my service. For Free invention protection forms, write Miss Ann Hastings, P.O. Box 176, Washington 4, D. C.

PATENT Searches $5.00. 48-hour airmail service. Invention Protection forms free. Write Patent Engineering Service, 711 14th Street, N.W., Washington 5, D.C.

PATENT Searches $5.00. 48-hour service. Free Invention Protection forms. Write Raymond L. Smith, Patent Searcher, 620 Sheraton Building, Washington 5, D. C.

61 INVENTIONS WANTED

INVENTIONS wanted. Patented; unpatented. Tremendous Manufacturers lists. Global Marketing Service, 2420 77th, Oakland 5, Calif.

INVENTORS: Hundreds of manufacturers have requested our assistance in locating marketable new products. Complete information free. Institute of American Inventors, Dept. 30C, 635-F Street, N. W., Washington 4, D. C.

INVENTIONS wanted now by my Manufacturer-Clients. Patented. Unpatented. Write Gilbert Adams, Patent Broker, 80-R Wall Street, Financial District, New York City.

IF your invention is adaptable to promoting we will contract for selling on cash or royalty. Free booklet outlines royalty rates, requirements. Kessler Corporation, 711-IW, Fremont, Ohio.

INVENTORS Don't sell your invention Patented or Unpatented until you receive our offer, write Cowgill, Box 298, Marion, O.

INVENTIONS Wanted. Patented or Patent Pending. 26 years experience Promoting Inventions. National Service Bureau, 3122 Meramec, St. Louis 18, Mo.

ATTENTION Inventors! We extend our invitation to exhibit your invention at the largest International Inventors Exhibition being held during the 1958 Worlds Fair at Brussels, Belgium. Non-Profit world-wide market facilities. Contact Otto Witt, Official American Correspondent, Box 1481, Milwaukee 1, Wisc.

CASH Buyers for inventions. Write National Inventors Institute, Box 7007, Cleveland 28, Ohio.

SUPERIOR promotions. Patented, unpatented inventions. Informative booklet, free. Superior, 338-342 North Rodeo, Beverly Hills, California.

64 MODELS, MODEL SUPPLIES

SHIP and yacht model fittings; blueprints. Send 35c for illustrated catalog #29 listing hundreds of items. A. J. Fisher, 1002-2 Etowah Ave., Royal Oak, Michigan.

SHIP Models. Most complete line in New England. Kits, fittings, plans, books, tools, engines, motors. 1958 illustrated catalog 35c. James Bliss and Co., Inc., Dept. PS 342 Atlantic Avenue, Boston 10, Massachusetts.

SHIP Model kits and numerous fittings from authentic plans including clippers, trawler, fishermen, frigates, privateer, radio control tug, etc. Send 25c for our new 1957 catalog. Model Shipways, Pollo P, 39 West Fort Lee Road, Bogota, N. J.

LIONEL Trains. Big Discounts. Bulletin Free. Catalog, 25c. Mack Brothers, 2041 Chicago Ave., Chicago 22.

WORKING Steam engines, boilers, tractors, fittings. Catalog $1.00. Tiny Power, Corvallis, Oregon.

CATALOGS: 84 Page Ships, fittings 50c; trains 50c; collectors soldiers 25c; with refundable coupon. Radio control 15c; vehicles, guns 20c; general hobby 15c; leathercraft 10c. Polk's, 314P Fifth Ave., New York City 1.

STEAM engines, boilers castings. Catalog 25c. Anton Bohaboy, 2297 Price, Rahway, N. J.

65 HOME CRAFTSMAN

ALL Crafts, Supplies. Large Free Catalog. National Handicraft, 199 William St., New York 38.

FREE "Do-It-Yourself" Leathercraft Catalog. Tandy Leather Company, Box 791-S22, Fort Worth, Texas.

WOODWORKING and Cabinetmaking course for beginning and advanced home craftsmen. Only complete low-cost home training program available. Write for free booklet. Interstate Training Service, Dept. G-2, Portland 13, Oregon.

OVER 900 Woodworking projects. Books and patterns. Free catalog. Craftsman, 115-C Worth Street, New York City 13.

WOODWORKERS—My tools save money. Free information. Homeshop Notes. Lee Tools, Box 22PM, Rochester 17, New York.

AMERICA'S most complete Home Craft supply company. Send 10c for big colored catalog. Giles Kendall Company, Huntsville, Alabama.

FREE. New big illustrated catalog. Leathercraft, Metalcraft, Woodcraft kits and supplies. Complete stock, top values, latest ideas. Write today. J. C. Larson Co., Dept. 7526, 820 S. Tripp, Chicago 24.

POPULAR SCIENCE OPPORTUNITIES

101 PATTERNS of smart gifts, novelties, shelves, action windmills. Plus "Make Money Jig Sawing." $1.00. Mastercraft, Dept. 1158, 7041 Olcott, Chicago 31, Illinois.

FREE. New catalog 2150 artist-drawn designs, patterns. Craftplans, 1322-B Wabash, Chicago 5.

MAKE yourself a better rotary power mower for less than $20.00 using your motor—No power tools needed. Send $1.00 for complete plans. Hancock, Box 754, Springdale, Conn.

ASSEMBLE fluorescent fixtures from inexpensive kits. Catalog 10c. Shoplite, 6508 Franklin Ave., Nutley 10, New Jersey.

KNOCKDOWN cedar chest and lumber free price list. Bedford Lumber Company, Shelbyville, Tennessee.

SQUAREKNOTTERS: Make belts, handbags, lanyards, dog leashes, etc. Special offer! Beginner's book, catalog and quality cord samples 25c. P. C. Herwig Co., Dept. 71-P7, 39 Henry St., Brooklyn 1, New York.

LEATHERCRAFT, Copper Enameling, Mosaic Tile, Metal Tooling, Many More Crafts. Complete illustrated Catalog 10c. Kit Kraft, 3211, Studio City, California.

METALCRAFT, 109 Pages, 152 Diagrams. Useful Handbook for All. $1.00. Geo. Turcotte, C.P. 142 St.-Sauveur, Quebec, Canada.

MEXICAN silver Peso coins—new, brilliant. Decorative for bracelets, belts, medallions. Five for $1.00. Robinson, Apartado 23548, Mexico 10, DF, Mexico.

STYLECRAFT "Pretraced" leather kits. Handbags, Billfolds, Filigree Belts. Patterns on leather. Just carve, assemble and lace. "Precarved" kits also available. Send 25c for catalog, free folder. Refunded first order. Apache Leather Company, 2804 E. Washington St., Phoenix, Arizona.

"PRACTICAL — Violin-Making" with Patterns $1.00. Supplies. Chelsea Fraser, 2025 Stark, Saginaw, Mich.

SAVE money by hand finishing at home. Trays and Bowls of beautiful Hawaiian hardwoods direct from our shops. Full directions included with free catalog. Satisfaction guaranteed. Write Hawaiian Specialties, Box 1122-PS, Honolulu 7, Hawaii.

FREE Power Tool price list. Big savings. Laircraft, Box F-5008, Detroit 35, Michigan.

LEARN Art Metalcraft and jewelry making. Complete, inexpensive, home training course now available. Special tools and materials furnished. Write for free booklet. Interstate Training Service, Dept. L-2, Portland 13, Oregon.

66 BUILD IT YOURSELF

NEW kitchen? Build refreshing plywood kitchen cabinets! Plans, photos, instructions $1.00. Playnecabinets, 4617 Johnson, Western Springs, Illinois.

GRANDFATHER clock movements, barometers, blueprints, kits. Wholesale catalog 25c. Mason-Sullivan, Noroton 2, Connecticut.

MELT Cast Iron, Brass, Aluminum. Make castings for profit. Free literature. Urautz Burner Company, Box 566-S, Tempe, Arizona.

FURNISHED Dollhouse-Toy Storage Unit Combined. Plans and Illustrated Instructions, $2.00. Vanderhoff, 720 Tyson Park Drive, Florissant, Missouri.

SWIM in filtered luxury! Cascade 16'x32'x7½' prefabricated Swimming Pool. Complete no extras $1095. Hundreds installed. Takes only two weekends. Banks with $3500. pools. Dealer Plan for those who act now. Write Cascade, Box 958, Hamilton Square New Jersey, or send $1.00 for plan.

DO It Yourself lamp kits—information. Tryem Manufacturing Company, 2723 Archer, Chicago, Illinois.

67 OLD GOLD, JEWELRY, WATCHES, ETC.

USED and new watches $2 up. Free List. Southern Watches, 5-PS So. Wabash, Chicago 3.

HIGHEST Cash For Old Gold, Broken Jewelry, Gold Teeth, Watches, Diamonds, Silverware, Spectacles, Platinum, Mercury. Free information. Rose Refiners, Heyworth Bldg., Chicago 2.

COSTUME Jewelry Supplies. Settings, Rhinestone, etc. 88 page illustrated catalog 25c. Milady, Box 1328, G.P.O., New York City (1).

GUARANTEE Pay Most, Old Bridges, Anything Gold, Any Condition. Helpenstell, 1429 Sandpiper, Houston 36, Texas.

GOLD, Silver, platinum, Diamonds Wanted. Cash Immediately. Highest Prices. Appraisals Made. Free Information. Wilmot's 1067 Bridge N.W., Grand Rapids 4, Michigan.

JEWELRY! Tremendous savings. Giant catalog 25c. Wagner, 76 Argyle, North Arlington, N. J.

WATCHES—We trade—Sell—Buy. Free Lists. Watchmasters, Route 7, Box 331, Tucson, Arizona.

10 WATCHES $18.00. Catalog 20c. Chronograph Repair Specialist, Berkowitz, 1150 Castlehill, New York 62.

RHINESTONES, Pearls, Costume Jewelry Supplies. Rhinestone Kit including Catalog $1.00. Catalog only, 10c. J & M Novelties, Dept. CM-4, Box 173, Broadview, Illinois.

68 TOBACCO & PIPES

100 PIPE Cleaners $1.00. King, 330 Alexander, Kamloops, B. C., Canada.

69 FOR THE HOME

FOAM rubber furniture cushions—Factory seconds 50% discount. Free catalog. Perma-Foam, 390-A Rye Ave., Irvington, New Jersey.

LEARN to play this new exciting card game just released. Send 35c in coin for instructions. Grabow, Toronto, South Dakota.

FIRE!!! Don't you burn up Christmas Day. Fireproof your tree. Spray with "No-Blaze." 50c. Nash, 1545 Saint Marks, Brooklyn 33.

CESSPOOLS, septic tanks, outdoor toilets, cleaned, deodorized without digging, pumping or moving. Free details. Chemical Cesspool Cleaning Company, Boston 34, Massachusetts.

ALUMINUM polish. New sensational formula especially developed for aluminum doors & windows. Guaranteed. $1.50 Pint. Cameo Chemical Products, 1342 E. Seven Mile, Detroit 3, Michigan.

WELCOME Christmas! Free information. 82 Do It Yourself Books. Catalogue—Big discounts. Small appliances, Housewares. Elevator Mail Order, 1214 Washington, Oregon City, Oregon.

70 OF INTEREST TO WOMEN

MAKE $25 to $35 weekly addressing envelopes. Our instructions reveal how. Glenway, Box 6568, Cleveland 1, Ohio.

FREE—Big New Wholesale Catalog! Up to 50% saving for you, family, friends on nationally-known gifts, jewelry, toys, appliances. Christmas cards etc. Also make money selling part time! Write: Evergreen Studios, Box 846-E, Chicago 42, Illinois.

DRESSES 24c; Shoes 39c; Men's suits $4.95; trousers $1.20. Better used clothing. Free Catalog. Transworld, 164-T Christopher, Brooklyn 12, New York.

60% PROFIT On Cosmetics—Famous nationally advertised Hollywood Cosmetics pay 60%! Make $25-day up! Hire others. For free samples, details, write Studio Girl, Glendale, California, Dept. 117110.

GOOD Money In Weaving. Weave rugs at home for neighbors on $89.50 Union Loom. Thousands doing it. Booklet free. Carlcraft Co., Power Street, Boonville, New York.

WE Pay $3.50 lb. dried. Grow Mushrooms Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 181, 2954 Admiral Way, Seattle, Wash.

MONEY, Typing—Sewing! Details Free! Edwards, 3912-PS, 12th, Des Moines 13, Iowa.

WANTED At Once woman with car. Would you like to earn $35 or more a week in your spare time, calling on housewives in your vicinity, with Rawleigh Products? Write Rawleigh's, Dept. K-790-PSC, Freeport, Ill.

FREE Health Catalog. Premiums Given. Sheldon Mail Order, Rt. 1, Sheldon, Iowa.

130 UNUSUAL Christmas items. Send 25c for catalog. Today. Joe Lee, Main Street, Louise, Miss.

MAKE money addressing literature free. Cummins, 4 N. 1st., Yakima, Washington.

$200 MONTHLY Possible, Sewing Babywear! No house selling! Send stamped, addressed envelope. Cuties, Warsaw 14, Indiana.

REDUCING Plan plus 34 Page Recipe Book Given Free of Extra Charge with Every Purchase from our New Health Catalog. Send for your Free Copy Today! Maupin & Maupin, R. 1, Box 233, Williamsburg, Ohio.

DRY eyes while peeling onions. 25c cash I'll tell you how. 1751 Britton Ave., West Linn, Oregon.

OPERATE Circular Distribution Service from home. "Dahle," Box 7-B4, Omaha 10, Nebraska.

QUILTING? Remnants? Silks, cottons, velvets, nylon. 25c yard, postpaid! Rainbow, Estill Springs 10, Tenn.

BEAUTIFUL Hand Cut Rock Crystal Rosaries Sterling Silver Chain, Center Piece, Crucifix Giftboxed $12.50. Box 7084, Newark, New Jersey.

71 FOR SALE MISCELLANEOUS

AMAZING Christmas bargains, novelties, surprise gifts. Write for illustrated catalogue. Bruce Patch Mail Order Service, Box 441, Walpole, N. H.

REVOLVING Santa Claus Chimes with Four Red Candles. Packed in Attractive Gift Box. Shipped to you from Sweden. $2.98 P.P.D. (Not more than one addressed to the same person). Money Back Guarantee. No C.O.D.'s. Postman Collects 15c Foreign fee. H. J. Vaccaro—Imports, 1708 N Whipple St., Chicago 47, Illinois.

GIFT-Pak, 4 Ballpens, Comb, Pocketsaver—$1.00 Postpaid. Refills 10c. General, 1614 Calvert, Wichita 13, Kansas.

REFILLS for ball pens. Fits all, including Paper-Mate. Writes beautifully and long. Guaranteed. 8 for $1.10. David Stry, Melbourne, Florida.

DRAWING Set. Excellent for Students or as Second Set. Includes 4½" Compass and Divider, 3⅝" Spring Bow Divider, 3⅝" Spring Bow Pencil, 3⅝" Spring Pen, 4¼" Ruling Pen; extra Handle for Pen and Pencil parts of Compass; Extra Lead. $8.95 Postpaid. I. S. & S. Co., Box 826, Milwaukee, Wisc.

SEND $3.25 for surprise joy-filled stocking, also Free Catalog. J. O. Smith, 6137 Burlington, St. Petersburg 10, Florida.

FREE Catalogue Knives from Solingen, Germany. Write W and W Sales, 1816 Williams, Norwood 12, Ohio.

72 WANTED TO BUY

SCRAP Mercury (Quicksilver) containers supplied—Tantalum, Tungsten, Silver, Platinum. Metallurgical Products Company, Established 1909, 35th & Moore Sts., Phila. 45, Pennsylvania.

TOP prices paid for old copies of Popular Science—need only issues from period 1890 to 1915. If books are complete, even though condition is not perfect, please write us and describe what you have. Do not send the issue until you hear from us. Write to Box 308, Tuckahoe, New York.

OLD gold, jewelry, Rings, Coins. Lanich's, 734 Eldred, Erie, Pennsylvania.

QUICKSILVER, platinum, silver, gold. Ores analyzed. Mercury Terminal, Norwood, Massachusetts.

74 RAZOR BLADES, SHAVERS

ELECTRIC Razors $2.50. Electric Massagers $2.75. NYF Products, 44 West Houston, New York 12.

POPULAR SCIENCE OPPORTUNITIES

77 GEIGER COUNTERS & TREASURE FINDERS

FIND Buried Treasure, gold and silver, with Goldak's sensational 3½ lb. "Find-It" locator, only $64.50. Write for free literature on complete line of mineral, metal locators; Geiger and scintillation counters. Goldak, 1540 W. Glenoaks Blvd., Glendale, California.

LITHIUM — The wonder metal. Free booklet describes prospecting information, uses, etc. Nu-Age, Box 142, North Battleford, Sask., Canada.

FIND lost or hidden treasure with new, improved metal detector. No ground pick-up. Also, underwater metal detector. Free literature. Gardiner Electronics, Dept. 1, 2545 E. Indian School Road, Phoenix, Arizona.

FOR Treasure Locators, Geiger, Scintillation Counters, Mineralights, M-Scope, Fisher Research Laboratory. See Advertisement, Page 276.

GOLD, silver, metal detectors. Geiger counters for uranium, Violites. Sensational new fully guaranteed models. None finer. Information free. Detectron Corp., 5528 Vineland Ave., North Hollywood, Calif.

FREE Literature—Lightweight, guaranteed Metal Detectors, Geiger Counters and Mineralights. Kits and Assembled Models. Electronic Applications, Dept. S, Box 8, Arlington 10, Virginia.

78 WATCH REPAIRING

WATCHMAKERS — Jewelers' — Machinists' Tools. Watchmaking Course. Catalog 25c. Bengal, Culver City, Calif.

WATCHMAKERS' Journal. Instructions and other valuable information for watchmakers', students, hobbyists. Sample copy 20c. Dean Co., Box 3218-C, Daytona Beach, Florida.

WATCH and clock repairing books. Free catalog. North American, 2320-BM, Milwaukee, Chicago 47, Illinois.

79 MISCELLANEOUS

FREE Wholesale Catalogs! Sporting Equipment — Cameras — Homewares — Everything. Econ-O-Mart, Whippany 6, New Jersey.

BUY Wholesale! Over 10,000 Nationally Advertised Products. Appliances, Cameras, Sporting Goods, Housewares, Watches, Typewriters, Tools, Clothing, etc. Send Postcard Today. Buy-Rite, Box 258, Hawthorne 6, New Jersey.

MARSHMALLOWS and Marshmallow frosting. Make your own from kitchen tested recipes. $1.00. Korner Candy, P.O. Box 3646 Loring Station; Minneapolis 3, Minnesota.

MAKE Your Will. Easy "Fill-In" Form. Instructions $2.00. Will Kit, Box 62B, Cliffside Park, New Jersey.

LIKE full mailboxes? Interesting "offer-tunities" galore 25c. Traylor Enterprises, La Feria 2, Texas.

TREMENDOUS Discounts — Appliances . . . Watches . . . Cameras . . . Gifts . . . Sporting Goods . . . Huge Selections. Catalog—25c. Valmart, Dover 8, New Jersey.

FOOD, $1. Week; Rent, $5. Year! Write, Hildens, Green Forest, Arkansas.

LUCKY Charm $3.00. Brings luck, success, fulfills desires. S. B. Wazkar, 51, Khattarguily, Bombay, 4

MAKE Pizza Pie for pleasure or profit. Send $1.00. Italian Food Products, Box 755, Beverly, Ohio.

SEND for Free Christmas Gift Catalog. Jeanne Shop, West Collingswood 6, N. J.

CANDLE Molds—New Designs and Supplies. Barker Enterprises, Dept. C, 6012 37th S. W., Seattle 6, Washington.

RECEIVE—Magazine Samples, Mails, Catalogues, Offers From Everywhere. Get Listed 25c. Rorick's, Cincinnati 26, Ohio.

SNOW Cone Machines. All Prices And Sizes. Special For Grocery Stores. Box 7803, Dallas, Texas.

RECEIVE Mail, magazines, catalogs, opportunities, 10c. Star Mailers, Leming, Texas.

WE Pay $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 182, 2954 Admiral Way, Seattle, Wash.

MINIATURE TV Salt Pepper Set. $1.25. R&S Sales, 3832 First, Des Moines 13, Iowa.

FREE Literature—Make Big Money Raising Fishworms and Crickets. Carter Farm-12, Plains, Ga.

"WINEMAKING." $1.00. Illustrated. Eaton Books, Box 1242-U, Santa Rosa, California.

SEW without needle, thread. No-Sew proven. Hundreds of uses $1.00. R&S Sales, 3832 First, Des Moines 13, Iowa.

ARTIFICIAL Human Eyes—Assortment mailed you from world's largest, finest selection imported glass and all-plastic unbreakable eyes. Write for free booklet and color chart. Established 1906. Denver Optic Company, 1014 University Bldg., Denver 2, Colorado.

BIG Multicolor Wholesale Catalog! Housewares, Appliances, clothing, silverware, cookware, luggage, binoculars, radios, phonographs, cameras, recorders, projectors, typewriters, shavers, sporting goods, toys, tools, sewing machines, watches, jewelry. Name brands. Huge discounts. Postcard: Selbyco, Decatur 374, Illinois.

130 UNUSUAL Christmas items. Send 25c for catalog. Today. Joe Lee, Main Street, Louise, Miss.

MAKE Wine Easy, 6c qt. Formula 25c. P.O. Box 1221, Sioux City, Ia.

MYSTERY Lighter. No Flint, Windproof. Lights Cigars, Pipes, Cigarettes. $1.50. Woodall, Box 231, Tulsa, Oklahoma.

CIGARETTES—Improved roller makes 20 for 9c. Facts free. Moberly Box 811, Owensboro, Kentucky.

GLASSES broken? All types replaced. Send pieces. Prompt service. Welfare prices, list free. Smith, Optician, Leominster 1, Mass. Box 247.

SPECIAL Offer! 4 Inch Bust and 6 post cards of Abraham Lincoln. Only $1.00. Vincent De Castro, 505 W. Miller, Springfield, Illinois.

"BUY—Sell—Swap Directory." Sample, details Free! Brand's, Sycamore, Ill.

BOOKS on antiques and their prices. Free circular. Warman Publishers, Uniontown, Penna.

MIRROR one side; transparent other side. Photograph people unawares. 8" x 10", $2.00. 16" x 20", $5.00. One-Way Mirror, PS-117, Box 625, Mt. Vernon, New York.

MAKE Wine. Complete Instructions $1.00. ABC Publications, Box 849, San Francisco 1-K, Calif.

READ Anyones Mind! Instructions $1.00. ABC, Box 849, San Francisco 1-MS, Calif.

PERPETUAL Calendar. Now 25c. J. R. Calendar Service, 209 W. Jackson Blvd., Box 135, Dept. 117, Chicago 6, Ill.

80 PERSONAL

JOEY: Greatly worried; Urgent telephone 8-8818 for Pop's sake. Katie.

MEXICAN Legal Matters. A. Espejo, Box 217, P.S., Tijuana, Mexico.

"HOW Can I Find Out?" You Can! Information confidentially developed. Any matter, person, problem. World-wide. Officially licensed. Established 1922. William Herman, 170 Broadway, New York.

LEARN While Asleep! Details Free. Research Association, Box 610-K, Omaha.

PAY Your Bills Now. Borrow $100 to $600 Cash by mail. Easy, quick, private. Repay in small monthly installments over 20 months. Your payments may run ½ less than now; have money left over to spend. Loan Order Blank mailed Free in plain envelope. Advise amount needed. State Finance Co., 323 Securities Bldg., Dept. T-227, Omaha 2, Nebraska.

PSORIASIS Sufferers! Discouraged? Write for Free important information today! Pixacol Co., Box 3583-SP, Cleveland 18, Ohio.

VITAMINS at amazing savings. Free catalog. B & B Vitamins, 309-C Belton Rd., Silver Spring, Maryland.

VITAMINS—Save 45%. Buy Direct. All Formulas. Free Catalogue. Vitaspec, Box 4435-S, Philadelphia 40, Pennsylvania.

FREE Bible Study Correspondence Course. 27 lessons, diploma awarded. Write, enclose stamp. Christian Guidance, 181 Bank, Newark 3, N. J.

LETTERS Remailed etc. 25c. Postcard 5c. Acme, Box 62, State Soldiers Home, Ohio.

HYPNOTIZE—One-Glance Instructions $1.00. Entertain—Read others Hands—Tell their Fortunes. Exciting Fun. For $1.00. Rorick's-PS-Cincinnati 26, Ohio.

BIBLE reveals Time of End! Exact Year, Month, Date sent free! Write: Harvest, Jefferson City 2, Missouri.

"RULE others with thoughts." (Telepathy.) Details—stamp. Wisdom, 846-56 Sunnyside, Chicago 40.

NEW Orleans Sunday Classified $1.00. Gene, Box 8402, N. O., La.

CONFIDENTIAL mail receiving, forwarding $3. Monthly, remails 25c. Heylps, 6209 Carter, Baltimore 14, Maryland.

LETTERS Remailed 25c. J. Love, 1419 E. 83d, Los Angeles 1, California.

MIAMI Classifieds Airmailed $1.00. Remails 25c. Kennedy, Box 532, Miami 38, Florida.

SLEEP drugless! Try Mack's Anti-Noise Earplugs if noise disturbs. $1. per box. Guaranteed. McKeon Products, Box 22698, Cleveland 9, Ohio.

DYNAMIC Prayer can lead you to your Abundance. Even plants respond to the Power of Dynamic Prayer. Amazing story. Write, Teocristic Fellowship, Box 683-PS, Los Angeles 27, California.

CHICAGO—mail forwarding address. Business, personal. Low rates. Continental, 20-P West Jackson, Chicago 4.

LETTERS, Christmas Cards Remailed, 25c; 3 for 50c. J. McKee, Box 202, North Hollywood, California.

BORROW By Mail. $100-$600. Anywhere. Air Mail Service. Postal Finance, 200 Keeline Building, Dept. 657V, Omaha 2, Nebraska.

MEXICAN Law. General Practice. Attorney J. Ceniceros, Apto. 79, C. Juarez, Chih., Mex.

CLEVELAND Remail Address. $2.00 Monthly. Gordon, 12201 Miles, Cleveland, Ohio.

SECRET Mail Receiving Forwarding System. $3 Month. Hedgpeth, Box 830, Alhambra 24, California.

ASTROLOGY Reading by the Master of the Stars reveals your future; answers three questions. Only $1. Send name, birthdate to A. Dale, Box 174, East Paterson, New Jersey.

FABULOUS Hawaii—Remails 25c Classifieds $1.00. Jaqui, Box 1771, Honolulu.

LETTERS remailed and forwarded 25c stamps or coin. Lewis, 1416 Gaty, E. St. Louis, Ill.

SUNSHINE City—St. Petersburg, Florida. 10 scenic views $1.00 remailed free. Christmas cards remailed 5 for $1.00. Sunday classified airmailed $1.00. Montgomery-7001-61st St. No., Pinellas Park, Florida.

DRUGS Sundries Wholesale. Men, Women. Illustrated list 25c coin. P. P. Ally, 1123 Ellicott, Buffalo 9, New York.

SELF-Help Psychology is a personal "must" if you are trying to replace nagging worries and gloomy indecision with confident courage and the right answers. Write today for free details about our amazing Behavior Mastery Plan. Applied Christian Psychology, Inc., Box 1924-Z, Louisville 1, Kentucky.

MEXICO City remails. 25c. Robinson, Apartado 23548, Mexico 10, DF, Mexico.

Open rear sights cut the accuracy of modern guns and ammunition *in half*. Lyman *precision* receiver sights deliver *all the accuracy* built into your rifle.

SPECIFY LYMAN SIGHTS With a receiver and front sight combination for all popular rifles, you can have Lyman Sights for your gun for as little as $6.50. You can't buy more accuracy *at any price!*

FREE CATALOG *Discover how you can double your shooting accuracy. Send for free, full-color 24-page catalog. Describes all Lyman Products for Shooters.*

THE LYMAN GUN SIGHT CORP.
MIDDLEFIELD • CONNECTICUT

GERMAN AUTOMATIC 6-SHOT REPEATER —22 CAL.

- Blank Cartridges
- Latest Model
- No Permit Required
- Fully Automatic

Self ejecting clip. Firing spring adjustable! Precision made by the Finest West German Gunsmiths—Wonderful for sporting events, theatrical performances, to scare would-be attackers, etc. 4" long, perfectly balanced. Sold on a money back guarantee—Send $6.95 Cash, check or Money order to:

$6.95 Postpaid

BEST VALUES COMPANY
Dept. G-18, 403 Market St., Newark, N. J.

ONE MILLION DOLLARS CASH
IN CONFEDERATE MONEY
Yours only $2.98

Be a deep south millionaire! Have money to burn! We'll send you exactly one million bucks in honest-to-goodness Confederate money—and all you pay is $2.98! You can do everything with this money but spend it. Amaze and amuse your cotton-pickin' friends. Win bar bets by the barrel! Light your cigars and cigarettes with $10.00 bills! Live it up! It's a million dollars worth of laughs and fun—all for only $2.98

You get one million bucks in $10's, $20's, $50's, $100's etc. denominations—enough to keep your friends laughing and happy for months—This offer is limited. Only $4 million dollars to a customer. Our supply of this loot is limited—so rush your order. . . . One Million dollars only $2.98, Four Million Dollars only $10.00. If not delighted keep $100,000 for your trouble and return the rest of the money for a full and prompt refund. Send to —BEST VALUES CO., Dept. M-93, 403 Market St., Newark, N.J.

A BICYCLE LICENSE PLATE

A BICYCLE LICENSE PLATE for style and quick identification is sure to please your child. Bears his name or nickname (up to 8 letters). The plate is heavy steel in baked enamel colors. It can also be attached to a tricycle or wagon. $1 postpaid, from

BEST VALUES COMPANY, Dept. A-68, 403 Market St., Newark, N. J.

66,000 CANDLEPOWER
World's Biggest & Most Powerful Flashlight

USES HI-VOLTAGE—LESS AMPERES

25 Cell Power
Overload "souped up" feature gives candlepower equal to 5 old time big lites.

15 Mile Range
On water, or forest tower, signal can be seen extreme distance. Safety lite for boats.

Sealed Beam Idea
Factory focused bulb with both argon & nitrogen gas for brilliance and cooling.

Solid Die Cast
Giant reflector precision die cast for perfect bullseye.

1958 Model in Gunmetal Finish
Beautiful, like a fine rifle. Revolutionary new copper plated steel barrel makes possible the use of this famous finish. Lifetime wear, the Hi-Bred is rugged and dependable.

Ideal Xmas Gift—Different
Every man wants this big lite. Shows up objects, prowlers at far distance at night. For auto travel, camping, hunting, fishing too.

Gunmetal Model.... $4.49 *Plus 25c Ea. Postage*

2 Pce DeLuxe Model in chrome.. $5.99
Unscrews in middle, fits glove compartment. Batteries Reg. 6 for $1.20 HI-BRED batteries 6 for $1.49. Extra bulbs 5 for $1. Order by Mail—Money back guarantee.

DOG SUPPLY HOUSE, DEPT 43T
18440 Grand River Detroit 23, Mich.

TREMENDOUS Profits with Hagen's Exclusive TEAR GAS PENCIL!

This Tear-Gas Pencil discharges smothering clouds of tear gas to instantly stop, stun and incapacitate the most vicious man or beast, an effective substitute for dangerous firearms; leaves no permanent injury. No selling experience needed. Handle as a profitable sideline . . . soon you'll sell it full time. Start now! Send $5.95 for complete demonstrating kit of Automatic Tear Gas Pencil. 10 demonstrators & 3 Powerful Tear Gas Cartridges. Not sold to minors.

SELLS EASY TO
SERVICE STATIONS
SMALL STORES
LOAN OFFICES
BANKS, HOMES

HAGEN SUPPLY CORP., Dept. P-117, St. Paul 4, Minn.

WHAM-O $1.50 40 LB. PULL

HITS LIKE A RIFLE—
KILLS RABBITS SQUIRRELS

Powerful, silent, accurate. For hunting, target, routing pests.

Sportsman's choice sold world over!

NEW! surgical quality pure gum rubber

275 heavy extra steel balls etc.

HUNTING SLINGSHOT

Heavy duty 7" ash stock. 40 heavy steel balls, extra rubber, target, adapter for shooting arrows. GUARANTEED. Professional model of Nat'l Slingshot Assn. At dealers, or write

WAMO MFG. CO., Box 12-G, San Gabriel, Calif.

OVERLOAD SPRINGS

$11.95 Per Pair postpaid

2000 LB. SIZE
$14.95

For cars and trucks. Front or rear. Gives 2000 lbs. extra capacity for all ½, ¾, and 1 ton trucks; 500 or 1000 lbs. extra for all cars. Easily Installed. Guaranteed. State make, model, and year.

BRINKMAN MANUFACTURING CO.
5401 W. 21st Dept. 6117 Topeka, Kansas

Hey Fellas— THE REAL McCOY!

You've heard about this beauty before, but we'll bet you've never actually seen one. Yep, it's a **GENUINE FUR-LINED POT** (with real fur, of course), and we'll guarantee it'll get a large chuckle out of anyone. If you live in the country, it's a natural—for the city boys, it's a magnificent trophy—and even makes a dandy TV seat. You'll have to go some to beat this gift! Yessir. $3.95 ppd.

LINCOLN PRODUCTS, A-411 Lincoln Bldg., N. Y. 17

NOW, with these perfectly scaled motor cars, you can give any child of any age a world of pleasure—at an unbelievably low price! Please don't confuse them with flat, brittle toys. These are *3-dimensional, unbreakable models*—40 in all—in brilliant colors, beautifully finished right down to the Wheels; no assembling necessary. Each car is clearly marked with its own name—and what names they are! Jaguar, Cadillac, Mercedes, MG—the racy sports and town cars kids dream about. They'll have unlimited fun staging races, auto shows, playing garage, guessing models. Never before has $1 bought so much *real play value!* Handsomely gift packaged. Please order today for quick delivery.

MONEY BACK GUARANTEE

All makes, models, including WORLD FAMOUS SPORTS CARS!

- Jaguar
- Mercedes
- Buick
- Nash
- Ford
- Rambler
- M.G.
- Sunbeam
- Packard
- Hudson
- Lincoln
- Chrysler
- Fiat
- Thunderbird
- Plymouth
- DeSoto
- Dodge
- Mercury
- Corvette
- Volkswagen
- Cadillac
- Oldsmobile
- Pontiac
- Chevrolet

ORDER NOW! Send only $1.00 for each collection of 40 cars. Add 25c for postage and handling for each set. Sorry! Limit 3 sets to a customer. No C.O.D.'s, please.

MODEL CARS, 220 Fifth Ave., Dept. C-364, New York 1, N. Y.
Canadian orders: Box 2370, Terminal "A", Toronto

2 WAY PORTABLE RADIO SET

SENDS—RECEIVES UP TO 10 MILES AS SHOWN with built-in antenna or hundreds of miles with outside antenna! Works on 80 and 40 meter (Novice) amateur radio-bands—also Aircraft and overseas broadcast (3 to 8 mc). PORTABLE SELF-CONTAINED POWERED WITH STANDARD PORTABLE RADIO BATTERIES. NO AC PLUG-INS NEEDED! Take it with you everywhere you go—on trips, vacations, camping—Keep in contact with home, friends. Has 5 watt crystal controlled transmitter—Sensitive Regenerative Receiver. Send-Receive switch. Wt. only 2 lbs. Size, only 6"x4"x4". TESTED—PROVEN—SIMPLIFIED—PRACTICAL—Full information given on quick easy to get license.

SEND ONLY $3 (bill, ck, mo) and pay postman $11.95 COD postage on arrival or send $14.95 for postpaid delivery. Complete kit includes all parts—tube, rolls plastoid cabinet, easy instructions. (Set of batteries $2.95; crystal $1.25.) COMPLETELY WIRED AND TESTED, POSTPAID $19.95. A regular $49.95 value—Order now before price goes up. GUARANTEED—AVAILABLE ONLY FROM:

WESTERN RADIO DEPT. BNS-11 KEARNEY, NEBR.

END PLANE UPKEEP

COVER YOUR PLANE WITH HERTER'S CHROME FIBERGLAS

C. A. A. approved

OR LET OUR CUSTOM PLANE COVERING PLANT DO IT FOR YOU.

- GUARANTEED FOR THE LIFE OF THE PLANE.
- WILL NOT ROT, NOR WEATHER.
- 5 TIMES THE STRENGTH OF STEEL YET LIGHT IN WEIGHT. INCREASES PLANE SPEED. DOES NOT SHORTEN STALL OUT.
- UNAFFECTED BY HAIL, SALT WATER OR SALT AIR
- ELIMINATES NECESSITY OF HANGARING
- GIVES YOUR PLANE A SKIN FAR SUPERIOR TO ALUMINUM OR FABRIC.
- COST IS LESS THAN ORDINARY FABRIC JOB.

WRITE TODAY FOR BOOKLET WITH FULL DETAILS. DEPT. KAFK

HERTER'S AIRCRAFT DIVISION
WASECA, MINNESOTA

SMALL! POWERFUL!

ECONOMY TRACTOR

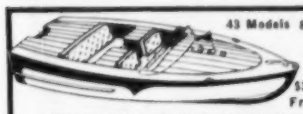
Unequalled value! Low price!

America's finest tractor. Ruggedly built. Easy to operate. 390 lbs. Borg-Warner clutch, trans. and diff 140 to 1 reduction. 40% more drawbar pull than ordinary tractors 8-1/4 H. P. engine. 20 quick change implements. HOOD, FENDERS

Thousands In Use

Write for complete details.

Engineering Products Co.
915-A-11 Niagara Ct.
Waukesha, Wisconsin



43 Models 8 ft. thru 18 ft.

$39.25 Up Freight Pd

BOAT KIT CATALOG Free!

EQUAL TO FACTORY BUILT BOATS

Luger Kits Save you ½ to ⅔ Cost

Assembled and finished by inexperienced owners. Luger kit boats equal factory-built in style, beauty, speed, handling. Send for BIG catalog showing cruisers, runabouts, convertibles, fishing boats; also Fiberglas, hardware, trailers, accessories.

LUGER INDUSTRIES INC DEPT A-11 3804 Lyndale So. Minneapolis 8, Minn.

GIVE A FINE INSTRUMENT
FOR CHRISTMAS
AT LITTLE COST

HULL AUTO COMPASS

$5.50 AND $6.95

At your dealer or write for literature.

MOST COMPASS DRIVERS USE A HULL
FAVORITE BOATING ACCESSORY, TOO.

HULL MFG. CO. P.O. Box 246-E-11 Warren, Ohio

Authenticast MINIATURE MILITARY MODELS

PRECISION DETAILED ACCURATELY SCALED

Realistic gems — Cast in metal directly from Gov't. blueprints. Send for Authenticast catalog showing full line of model ships, tanks, planes of all nations, as well as model RR items — 35¢

COMET METAL PRODUCTS CO. INC. RICHMOND HILL 18, N.Y. N.Y.

$AVE $ ON U$ GOV'T $URPLU$

Our publication "Government Surplus Sales" lists hundreds of items for sale by the U. S. Government at tremendous savings, as low as 1¢ on a $1.00.

These are samples of the savings that are being made:

LIFE BOAT	$12.00	GRINDER	$4.69	SHAPER	$15.00	DUMP TRUCK	$76.77
TRACTOR	$75.00	TYPEWRITER	$7.51	FREEZER	$50.00	SPRAY PAINTER	$15.25
				MOTOR	$4.00		

Hundreds others listed in our bulletin "Government Surplus Sales" and may be purchased direct from U. S. Government, Hunting, Fishing, Camping, Sporting Equipment, Photographic Equipment and Supplies, Radio and Electronic Equipment, Amphibious Trucks, Jeeps, Boats, Motors, Binoculars, Plumbing, Electrical Equip., Cars, Power Tools, Machinery, Chemicals, Furniture, Office Equipment, Supplies, Scrap, Etc.

How may you receive our bulletin "Government Surplus Sales?" By sending $1.00 to

GOVERNMENT SURPLUS SALES, P. O. Box 169, Department 4-3, East Hartford 8, Conn.

Subscribe to....Trailer Topics Magazine

6-Month Trial Subscription $1

Discover how you can enjoy every modern convenience in your own home for just pennies a day. Read the true-life stories of those who live in mobilehomes and love it.

Only $3.00 for 2 years.

...TRAILER TOPICS MAGAZINE

Suite 1598 28 East Jackson Blvd. Chicago 4, Illinois

FOR QUICK STARTING... SMOOTH ACCELERATION STOP STALLS—POOR MILEAGE

INSTALL A MILESMASTER®

FUEL PRESSURE REGULATOR

Let Milesmaster help you enjoy better, more economical motoring. Sold everywhere . . . only $6.95, plus installation.

Money Back Guarantee

MILESMASTER, INC. Dept. J Exeland, Wisconsin

Do you work all day with

COLD FEET?

NOW,

at last, a new, modern, low priced electric foot warmer that will keep you healthy, happy and comfortable

Help prevent colds with... ELECTRO MAT

Check stand cashiers, secretaries, assembly line workers, housewives, office workers, theatre cashiers, machine operators, telephone operators, and many others throughout the country are now singing the praises of the Electro Mat. There is no further need to work all day with cold feet. Many colds, causing absenteeism and irritability, can be directly traced to cold feet. ***Safe and Economical***

Size 14" x 21" light-weight portable

Consumes less power than a 75 watt light bulb.

Mail your check or money order today for ONLY

$7.95 Delivered

PETERSON RUBBER MAT CO.

5508 N. Halifax Arcadia, California

Please send me ... Electro Mats at $7.95 each

IMPORTANT SAVING.

If 6 or more ordered, price is only $6.95 each.

☐ C.O.D. Enclose $1.00 deposit with order.

☐ Prepaid

Name_____

Address_____

City_____ State_____

PLEASE PRINT CLEARLY

GIANT TOY COLLECTION

Hours and Hours of FUN!

Here's everything a boy and girl ever dreamed of—Tractors, Cars, Trucks, Space Ships, Circus Animals, Farm Animals, Railroad Engines and Cars, Soldiers, Cowboys and Indians, Tanks, Bazookas, Cruisers, Tanks, Artillery, Farm Equipment, Heavy Road Equipment, Jets, Bombers, Rockets, etc.

NOT AVAILABLE IN STORES

True, TWO DIMENSIONAL reproductions of expensive toys. Each toy stands up on its own base. Up to 1½" high and 2¾" long.

Limit—5 sets to a customer.

Send $1 to: BREA TOY MFG., Dept. 8911

114 East 32 Street, New York 16, New York

LOOK! UNUSUAL XMAS GIFT!

Makes a Car **BELLOW** like a Bull

THE *New Kattle Kaller*

AUTO HORN

Completely different novelty horn. Sounds just like a lonesome bull. Imitates any cattle sound. Actually used by ranchers to call cattle. Makes low gentle tone, or roars full blast. Makes pedestrians smile. Variable tone control located on steering column.

If your dealer can't supply you, order direct and send us his name.

Send check, M.O., C.O.D., specify 6 or 12 volt system. Money back if not satisfied.

- *Really gets attention!*
- *Easily installed under hood*
- *Fits any Car or Truck*

Special Introductory Offer
$10.95 Post Paid
($2 below reg. list)

KATTLE KALLER DIV., 1953 So. 20th St., Omaha, Nebr.

WARN HUBS ON YOUR 'Jeep'

STOP FRONT DRIVE WEAR

Models for all 4 w.d. to 1½ tons

Over 100,000 Warn Hubs are now in use, *proof* that free-wheeling 2-w.d. with Warn Hubs means big savings in gear, engine, tire wear, gas, *plus* more pep, performance, power in high and easier steering. Now, with Warn Lock-O-matics, you have economical, drag-free 2-w.d. *or* tractive 4-w.d. *automatically, as you shift!* Ask your *local* 4-w.d. dealer to install Warn Lock-O-matic or Locking Hubs today. Fully guaranteed. Write for free literature.

WARN MFG. CO., Riverton Box6064-811, Seattle 88, Wn.

JEEP HENRY-J KAISER OWNERS

RE-POWER NOW with a V-8 engine—Use
FORD • CHEVROLET • MERCURY

in 2 or 4 Whl-Dr, Jeeps, Jeepsters, Sta-Wgn, Trucks or cars. Conversion Kits $43.25 to $59.85. If you want fast action tell us which engine you wish to use, give us year, Model, (2 or 4 Whl-Dr), of your vehicle. Send Min. $15.00 Dep. and we will ship correct kit. Bal. COD. Send full amt. for Prepaid shipment. Wire, phone or write for free details.

HOOSIER MACHINE PRODUCTS CO.
314 S.E. 6th St. Phone 676 Pendleton, Oregon

BOAT PLANS-PATTERNS FRAME KITS

A modern up to date series of inboard and outboard designs for the amateur builder. State specific size and type or send 50c for BIG NEW CATALOG.

marine GLEN designs Box 568P Compton, Calif.

SKI KIT $18.00 SAVE ½ IDEAL CHRISTMAS GIFT

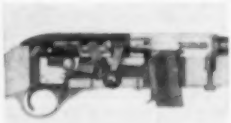
Simply assemble and finish our new water ski kit and you have a pair of skis worth twice the price of the kit. Skis are 7 ply moulded plywood, 67½" long, 7" wide, 9/16" thick. Sturdy rubber foot pieces. All parts plus instructions included — $18.00. Order from your Michigan dealer or MICHIGAN WHEEL CO., Dept. PS-11, Grand Rapids, Mich. C.O.D. orders accepted.

"How in the World Does Mossberg do it?"

Two major improvements in rifle design!

NEW 342 and 342K
5 lb., 22 cal. carbine with 7-shot clip magazine. **$31.95**

First big advance since the bolt action rifle was invented. A hammerless, closed-in action with no bolt or striker exposed. Assures smooth performance, no distraction of aim...plus added eye-appeal and streamlining.



Hammerless closed-in action.

NEW 352 and 352K
5 lb., 22 cal. auto carbine with 7-shot clip magazine. **$37.95**

First clip-type automatic to take all three 22 caliber cartridges—Short, Long and Long Rifle. A convenience thousands of shooters have wanted—another Mossberg exclusive—in this beautiful, inexpensive little carbine. Shoots 7 shots in less than 2 seconds.

These de luxe features on all four models—genuine walnut stock in custom-type Monte Carlo design with sling strap on left. Two-position, hinged fore-end of black Tenite. "K" models have open sights, the others have peep and military front sights.

FREE: Colorful catalog of Mossberg sporting firearms. Send today...and see these thrilling new models at your dealer's!

Rifle prices $1 higher west of Rockies

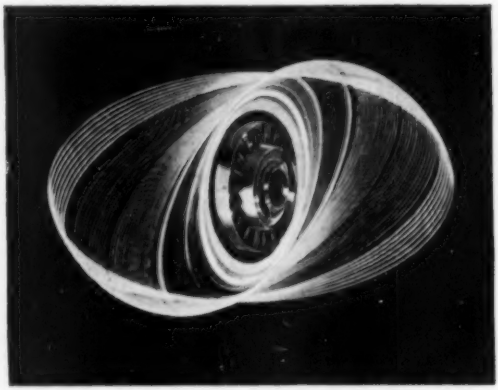
Mossberg *for accuracy*

O. F. Mossberg & Sons, Inc.
76511 St. John St., New Haven, Conn.

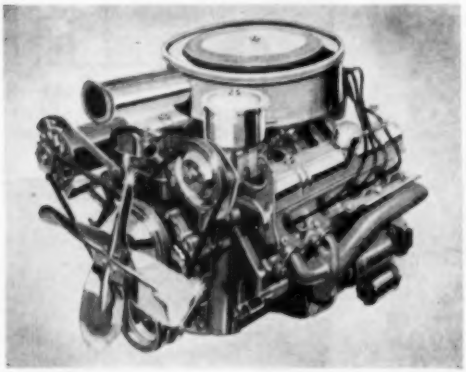
The Bombshell News Behind This Fresh, Bold Look

When better automobiles are built Buick will build them

1. Flight Pitch Dynaflow*—Those Buick engineers make transmission headlines again. In the eagerly awaited '58 Buick, they've developed a true *infinitely variable* stator for their triple-turbine Flight Pitch Dynaflow. Now those stator blades in the unit swing not to just two or three fixed positions, but literally to a million or more. That means maximum-power angle for starting, if you want it; gradually decreasing angle as your pace increases; and instant response at *any* pace in perfect ratio for the need at hand. The stator's 20 blades throw oil at the pump at 30 gallons per second at high angle. And this oil, moving at a velocity of 180 miles-per-hour, impinges on the turbine blades with a *constant force of 1,140 pounds.* The performance is spectacular.



2. The B-12000 Engine—When you talk about engine efficiency, this is the one—the most modern engine it is possible to build for today's fuels. Vertical-valved for extra compactness (world's only vertical-valve V8), this great engine works at a neat 10 to 1 compression, develops *a thrust of 12,000 pounds behind every piston's power stroke.* That translates into superbly brilliant



response. A unique center-of-percussion theory is used with "tuned" nodal-point mounting for more controlled rotational motion of the engine, and for increased lateral stability. With the response of this powerful engine, and the instant flexibility of Flight Pitch Dynaflow, you get in this '58 Buick the first big car that's really light on its feet—most nimble Buick ever.

3. The Miracle Ride plus *Buick Air-Poise Suspension.** Long years of constantly progressive ride-engineering have brought to a peak today the advantages of Buick's ride basics: X-member frame, full-length torque tube, and coil springs at all four wheels. In the '58 Buick chassis, you get a total of 46 feet of spring steel for torsional absorbence of road shock, which cuts vibrational frequency to a low of 65 cycles per minute at the front, and to only 58 cycles at the rear. As an option, Buick Air-Poise Suspension replaces the coil springs, works new wonders for the Miracle Ride. To the basic solidity and stability of the Buick chassis—and without any major changes in its design—it adds 4 columns of compressed air with a *variable spring rate.* This keeps the car at one level, automatically, regardless of load or road condition. There's no other ride like it.

4. Many Significant Changes are found throughout the new B-58 Buick, since a great many projects long under development suddenly came to full flower this year, in this car: the Dynastar Grille, the clean, fresh styling, the "velvet wall" sound silencing, the new Quadrajet Carburetor, the Air-Cooled Aluminum Brakes,* and many others. Best thing any knowing car buyer can do is drop in on

his Buick dealer at the first opportunity to take a good long look at these B-58's, then drive one and let it speak for itself.

BUICK *Division of* GENERAL MOTORS

**Flight Pitch Dynaflow standard on Limited and Roadmaster 75, optional at extra cost on other Series. Air-Poise Suspension optional at extra cost on all Series. Aluminum Brakes standard on all Series except Special.*

See TALES OF WELLS FARGO, Monday Nights, NBC-TV and THE PATRICE MUNSEL SHOW, Friday Nights, ABC-TV

GENERAL MOTORS GOLDEN MILESTONE

The Air Born B-58 Buick

Why Air Filters Must Be Changed

Revolutionary new FRAM Air Filter reduces engine wear as much as 90% . . . but, must be properly serviced!

Air can be your engine's worst enemy! Here's why. For every gallon of gasoline your engine burns, it gulps 9,000 gallons of air—air that comes from outside the car—laden with dust, dirt and other abrasives. If these abrasives were allowed to enter your engine you'd quickly have an expensive repair bill!

Now, an air filter has been developed that gives car owners almost perfect engine protection against these abrasives. This is the new *Filtronic* type carburetor air filter. More than half of all '57 and '58 cars are equipped at the factory with this type.

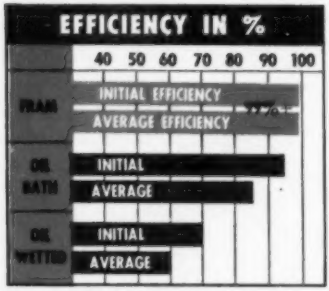
And most of these cars are equipped with FRAM *Filtronic*® Carburetor Air Filters which have an amazingly high efficiency of 99%+ throughout their long life. Unlike other filters of this type the FRAM *Filtronic* Air Filter absolutely prevents the by-passing of dirty air due to the exclusive FRAM patented, built-in gasket.

As a result of this very high efficiency, *Filtronic* type air filter cartridges trap and hold more dirt and dust than old style filters. This means they must be serviced and replaced regularly.

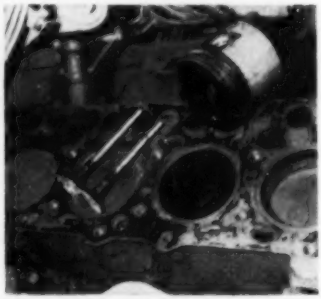
So, for a smooth-running engine that keeps the power you paid for, follow your car manufacturer's recommendation: have your air filter serviced regularly; replace it at least once a year.

AND, REMEMBER TOO, A CLEAN OIL FILTER keeps dirt and sludge out of your engine. For best performance, be sure to change *both* your oil and air filters regularly. Be sure to insist on FRAM—the filter chosen as original equipment by more car manufacturers than any other brand!

FRAM Corporation, Providence 16, R.I.
FRAM Canada Ltd., Stratford, Ontario



The highest filtering efficiency—initially and throughout long life: FRAM *Filtronic* Carburetor Air Filter.



You expose your engine to this kind of damage when you neglect your carburetor air filter.

Here's the air filter that reduces engine wear up to 90%! Always insist on genuine FRAM *Filtronic* Carburetor Air Filters.

Remember—

FRAM Filters best!

POPULAR SCIENCE Monthly

The Hidden Reasons Why You Buy a Car

The kind of automobile you drive tells researchers secrets about you that you'd never admit. Now Detroit is using this knowledge to influence your choice among the new models

By Guy Shipler Jr.

THAT new car you drive around so proudly is betraying your innermost secrets.

Whether you know it or not, you laid bare your hidden desires and ambitions the minute you drove away from the dealer. For, unless you are different from most people, your car shows—more clearly than your home, your neighborhood or the clothes you wear—just what kind of person you really are.

The science that spills the beans about you is called motivation research. It's done not by guesswork, but by painstaking and probing inquiries—sometimes so framed that the persons questioned don't realize how much they are telling.

Your car, the researchers have found, tells what you want to be or what you think you are. It probably reveals more of you to friends and neighbors than you would yourself after a few highballs in their living room.

You don't believe, of course, that your new car shows your hand this way. After all, you carefully explained that you had to get it because your old one needed a valve job, or the bearings were shot. You hated to spend all that money, but it was just sound economy.

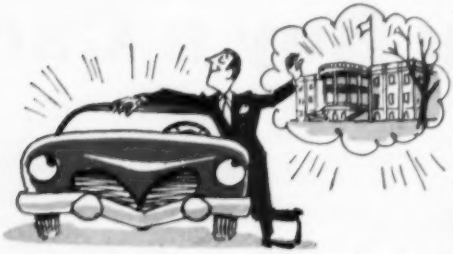
Most neighbors will buy this, even if they don't believe it, because they'll be telling you the same story as soon as they decide that their own bearings have worn out. (They may reach this decision earlier as a result of your purchase.)

The foregoing is the embarrassing truth that the auto makers have learned about you and me as their customers. They spend millions of dollars a year probing for the real reason we buy their cars (or somebody else's). They turn up findings—through deep and thorough consumer analyses—that would make the most self-sufficient person blush.

And the main finding is this: We seldom buy new cars any more because we really need them. We buy them because

they have become a symbol of our social and material status.

The "personality" of the new Edsel was created deliberately to appeal to "the young executive or professional family on the way up"—after exhaustive



Most of us take more pride in a new car than we would in being President

research turned up evidence that this group offered the best potential market for a new entry in the competition for the car buyer's dollar.

"The automobile is such a strong instrument of self-expression," says one company that has done deep motivation research for the auto makers, "that it has replaced house, home and motherhood as a gauge of security and success. Most Americans take more pride in owning a new car than they would in being President of the United States."

Thus the auto makers know that deep emotional and personality factors play a far bigger part in our decision to buy a car than the practical reasons we give.

That's a big change. Not too long ago, a car was simply transportation. A bit later it became a necessity. Even though these things are now even more true, they have become secondary to a car's value as a measure of the family's place in the community.

We would never admit that we buy a car for frivolous reasons. Our prestige is based on appearing logical and mature.

But recently one of the Big Three auto makers trapped a sampling of car owners into revealing their real motivations. When asked to mark on a checklist the most important things they would look for themselves in buying a car, the vast majority headed the list with economy (gas mileage), dependability, roominess, brakes. At the bottom stood such things as outside looks and engine power.

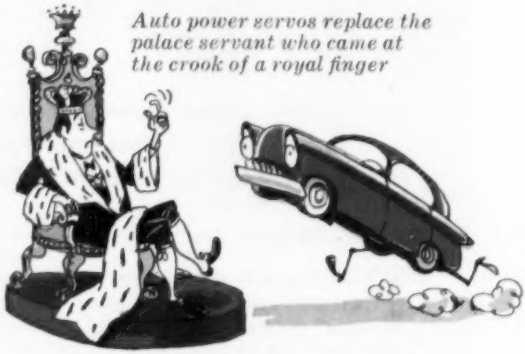
Then the company sprang the trap: "Now what do you think your friends would consider most important?" it asked.

Sure enough, the list was completely reversed. Outside appearance stood at the top, and power ran a close second.

In other words, we attribute to our neighbors our own secret desires. No matter how stoutly we deny it, we have told the auto makers that they will sell us more cars by emphasizing styling and power rather than economy and brakes.

We have also told them that we will buy most of the fancy gadgets and accessories they make. (Note how power steering and power brakes have caught on, in spite of initial wariness.) Says one spokesman for an auto maker: "I'll swear that if we could make the car run by lifting a little finger—and proved it would work—the public would leap at it.

"Why? Because it gives a sense of power and prestige, a sense of controlling



Auto power servos replace the palace servant who came at the crook of a royal finger

something. For the average guy, the modern servo-mechanism is a substitute for the palace servant who comes at the crook of a royal finger."

Because of this strong prestige factor, we don't hesitate to buy optional equipment, in spite of extra cost. "In fact," says one car company, "some new gadget might make a man decide to buy a particular car, especially if it will mean only a few dollars extra a month."

Essentially, this is because total price means little in our final decision these days. We ask ourselves only: "Can I meet the monthly payments?" We almost always convince ourselves that we can.

Why are we so intense about a new car? Simply because more than anything else in our society an automobile crystal-

Many a man finds it impolitic to drive a more costly car than his boss does

lizes our dream of being somebody—just as a fine horse would have 50 years ago. The social code is far more stringent in other areas—for example, not everybody can live in whichever neighborhood he chooses, nor join the club he wishes.

But any man can own any car he wants without being ostracized: The Cadillac doesn't seem too much more out of place in the carport of a development house than it does on the sweeping bluestone curve of an estate driveway.

On the other hand, a sensitive man knows that it isn't always politic to buy a car above and beyond his economic and social status. Many a man in a new job has spotted his boss driving a less expensive car than he was—and corrected this *faux pas* by trading the buggy for one in the boss' price class.

No matter whether you just bought a Ford, a Cadillac, or something in between, you will almost certainly be that car's greatest booster. The surveys show that the new car owner is the most careful reader of the advertisements for that car—he hates to feel that anything can be criticized about it, and is constantly looking for proof of the wisdom of his choice.

He will stick with his car make for years on end; his sense of loyalty resembles the old-school-tie enthusiasm of a college alumnus on a reunion weekend.

One thing that can make him switch brands—and it gives car makers nightmares—is buying a new car that turns out a lemon. The average man takes this as a personal affront, a betrayal of years of devotion and loyalty. He then becomes that brand's worst enemy. "The only thing that would shock him more," said one manufacturer, "would be to have his best friend run off with his wife."

More than anything else, it's this brand loyalty that trips up car makers' efforts to draw customers from their competitors.

People won't change overnight from one car make to another the way they change cigarette brands. It takes time to persuade them that a different car more nearly fits their personality.

Yet there's plenty of survey evidence which shows an almost direct relationship between four general personality types and the cars they buy:

Conservative. He likes dependability, trade-in value, rather than appearance or power. He'll take a four-door over a hard-top, a hard-top over a convertible.

Moderate. Likes a car that's popular; he wants to be in the swim. Goes for a combination of appearance and performance, likes new styling rather than modification of old, will buy current gadgets.

Sophisticate. Prefers something different, perhaps imported. Will put up with

A new car that's a lemon can make the brand-faithful buyer a bitter enemy

(and deny) many inconveniences for an unusual car.

Extremist. He wants attention, goes for big, costly cars with lots of flash. Will try any innovation, tested or not.

Attitudes toward specific cars may bear little relation to the cars' 1958 reality; instead, they tend to be crystallizations of feelings accumulated over the years. "I buy Gadget 8's," says Papa, pointing to his five-tone, titanium-plated, power-ash-trayed car, "because they're conservative." Well, maybe Gadget 8's were, once.

The sophisticate will put up with discomfort to be different

These generalities can be narrowed down to individual makes and models. The most thorough pinpointing was done by Social Research, Inc., for the *Chicago Tribune* a few years back. Their findings (with updating by other research groups):

Cadillac. Few owners are conservative. Those who are think of fine engineering and performance instead of social status. Newly prosperous and even low-income owners (a growing number) wish for attention. This car gives them the status, in their own minds, which they may not otherwise be able to get.

Lincoln. Not so pronounced a status symbol as Cadillac—and thus preferred by those who feel their status needs less confirmation. Owners think they show interest in power, performance and appearance in a more dignified way.

Imperial. A solid, dependable luxury car whose mechanical features appeal to the conservative in the upper-class car group. New body design last year has attracted moderates (new styling appeal) and extremists (big, costly cars, innovations) away from other high-priced cars.

Chrysler. The upper-class car that moderates like—not too showy, not too conservative. A "family" car which still shows the owner is up-to-date and willing to go along with what's popular. Owners like to stress high power, want wide choice of colors and models, like latest accessories that aren't extreme.

Buick. Also the moderate's family car. Mobile, successful people who want higher social status. Primarily preferred by men, who like its substantial look.

Oldsmobile. Owners like some flashiness; they emphasize appearance, and want to show their individualism. Otherwise, the car is similar to Buick.

Mercury. Appeals to people who combine individuality and responsibility. Owners consider it reliable and utilitarian, but are most fond of its showy appearance.

De Soto. Conservative, middle-aged or retired people like this car—it's a sign of being "settled down," helps express their dignity, reserve, maturity. Like the car, its owners feel dependable, practical. But its appeal is changing with recent flashier styling.

Dodge. Similar feelings toward this as toward the De Soto—except that it appeals to a younger group. Owners tend to talk about low operating cost.

Pontiac. Moderates like this because it is the most moderate of cars. It brings few general criticisms; above all, people consider it a good value.

Ford. Least class-bound car. Liked by people who think of themselves as youthful, quick, high-spirited. Combines a "tasteful showiness" with reputation for speed, durability and high trade-in.

Plymouth. The car the conservative still in the low-priced-three will be most likely to buy. He thinks of it as a sensible car for stable, average people, is impressed by economy. Surveys show Plymouth attitudes to be mildest of all. Restyling may bring attitude changes.

Chevrolet. The moderate in the low-priced-three likes this car. People evaluate Chevy in a more practical, factual tone (they stress universal service facilities, for instance) than they do Ford. A new appeal is to the performance-minded.

Maybe you will violently disagree that your car reveals even this much about you. And maybe you are right, because we are all individuals, and the same values don't apply to everybody in the same way. Just don't look at yourself too closely in the mirror. END

This month Detroit launches its biggest Battle of the Stylists. Popular Science color cameras previewed the designers' secrets to bring you closeups of 14 new cars in our

Auto Showroom: 1958

Keynote of the new models this year is body styling, which auto makers have found the Open Sesame to car buyers' checkbooks. The battle of the fins continues. Most cars are four-eyed. Grilles are splashy, hoods low, glass area immense. Rear-end ornamentation is even flossier. Colored metal trim is coming in big, while two-tone finishes are rarer.

The engines have a gosh-awful amount of power. Air springs are optional on many makes. There are some changes in brakes and transmissions.

See the next 11 pages for a hot-off-the-line look at the new automobiles. Then turn to the section following the color photos for detailed reports on what's new under the hood.

Auto Showroom: 1958

Chevrolet

WHEN they started planning the 1958 Chevrolet a couple of years ago, someone in authority must have said, "If we're going to make changes, let's do a job of it." They have. The sheet metal starts conservatively enough in front but gets astonishingly ambitious as it proceeds rearward. The fins are wings, no less. Underneath, there's an X-frame, like the Caddy's, and coil springs all around. There's a whopping new engine and a sports model called the Impala, shown at the left and below. Above is the Bel Air hardtop.

Lincoln

IF YOU'RE shopping around for an automobile that's more than 19 feet long, stop right here. The Lincoln is the world's longest car. But it handles like a sports job, and it's one of the quietest cars to come out of Detroit for the new model year. That's due largely to integral body-frame construction. Everything

Rambler

THE Rambler has grown up. Brand new for '58, it has four headlights, a pushbutton torque-converter transmission, flared fins and optional horsepowers of 127, 138 or 215. The wagon has the familiar notched roof and travel rack. At 191 inches, the car continues to be the shortest in the U. S. seating six.

above the running gear is welded together like a battleship. Then it's plunked into a tank of primer paint so that—on the factory's word—it can never, never rust. Some vital statistics: The height is 56.5 inches, down four from 1957. The engine, brand new, matches the heroic dimensions of the car, with a displacement of 430 cubic inches. The axle ratio is 'way down to 2.87-to-1.

Ambassador

BIG brother to the Rambler, the Ambassador shares the pushbutton drive. The grille is anodized aluminum, as are the panels extending the full length of the sheet metal. On a wheelbase of 117 inches, the car measures 201.4 inches over all. Its V-8 turns out 270 horsepower, or .8 hp. for every cubic inch.

Plymouth

THE most popular car in the Chrysler Corp. stable will make a lot of fans happy—the ones who hoped that it wouldn't be changed much in looks for the new model year. The fins have that same bold flare. There *are* dual headlights in each fender, of course, and a horizontal-bar lower grille. Those "dorsal fin" front fender ornaments are higher. Turn signals are tucked in above the headlights. The tail lights are outlined in polished aluminum. A center section has been

added to the rear bumper to take the back-up lights. When they're on, they throw red warning beams sideways. A stretched-out P-l-y-m-o-u-t-h adorns the deck lid. The top line of Plymouths, the Belvederes, have an aluminum insert on the rear fender. Increasing horsepowers and torque, which put a strain on manual transmissions (the automatic boxes are oil-cushioned), necessitated beefing up gears, lowering ratios. The getaway TorqueFlite automatic is available now on all lines. The snooty Fury (below) continues as a two-door hardtop.

Auto Showroom: 1958

DeSoto

Imperial

TAKE a good look at these grilles. With Plymouth, the rest of the family of Chrysler Corp. cars—De Soto, Chrysler, Imperial and Dodge—have revamped front ends as their most striking change for the new model year. Like Plymouth, the Dodge can now boast four headlights for better highway illumination. The Imperial, Chrysler and De Soto had them for '57. De Soto's grille is a two-piece section of aluminum mesh, Chrysler's a perforated anodized aluminum arrange-

ment with horizontal bars. Imperial's consists of six sections of extruded aluminum and Dodge's has thin vertical and horizontal bars of chromed stainless steel. An industry-wide trend, the use of aluminum is partly for manufacturing economy and partly due to its corrosion-resistance. Anodizing (which is oxidizing) impregnates the metal with inorganic dyes. All Imperials, and hardtops in the De Soto, Chrysler and Dodge, have double-wrap windshields.

Buick

THE motorist clapping his eyes on the new Buicks for the first time will notice two things before he blinks: The portholes are missing for the first time in 10 years, and the full rear-wheel cutout has disappeared. That's only a start in the changes. For a grille, the stylists have built in 160 little studs.

Studebaker

STUDEBAKER models are lower by as much as two inches except on station wagons. Hoods and grilles are new. Four headlights are standard on Presidents and Commanders, optional on Champions, not available on Scotsmen. There's new two-toning, lower seats, and an adaptation of the '57 fins on Hawks.

The hood is higher to enhance the driver's wow-what-power! feeling. The sweep-spear molding is still there, but decorative speed lines have been added to the rear fenders. Door-window frames are chrome on all models. All series designations are in gold. The Buick's mechanical innards have undergone revision too. There's a new optional transmission, new front brakes and a new twist on air suspension.

Packard

THE Packard has been added to S-P's Hawk lines of cars—sports sedans. The hood, part of the grille and the instrument panel are made of plastic reinforced with glass fibers. The rest of the grille is die-cast aluminum. The vinyl armrest trim overlaps on the sheet metal. The deck has a spare-tire imprint.

Corvette

AMERICA'S only sports car is coiffured with new speed lines, a louvered hood and four headlamps. The bumpers, fore and aft, are real this time. The 283-cubic-inch engine comes in four horsepowers—230, 245, 250, 290. For racing, there's a special cam. Instruments are clustered. For passengers: a hand-hold.

Continental

ONCE more bracketed with the Lincoln on the production line, the Continental shares the same body with minor variations. Instead of a horizontal-bar grille and back-bumper panels: latticework. The rear window slants forward, not back. Trim refinements are flossier. The controls are gratifyingly complex.

Chevrolet:

Lower, longer, livelier

Contrast between 1957 and 1958: slinky Impala (right) is four inches lower in silhouette.

By Devon Francis

WHEN Chevrolet introduced its 1958 models last month, it looked as though the engineers and stylists had jacked up the radiator cap and built a new car around it.

In this first completely new passel of Chevrolets in three years, the changes, big and little, run into the hundreds. Here are the main ones:

- An entirely new metal skin, styled to cause strong men to falter and women to wilt.
- A new frame and a type of body construction that suggests a trend toward no frame at all. The cars, on a bigger wheelbase, are nine inches longer.
- Coil springs all around for the first time in the company's history, with air springs as an option.
- More horsepower, but an evident reluctance to sell cars mostly on green-light getaway.
- A "street" version—as opposed to a Corvette racing version—of fuel injection that may well make history.
- A mating of fuel injection and automatic transmission for performance that is sheer sparkle.

The new automobiles are Chevrolets, all right. It says so on the front of them. But

they are Chevrolets in name only. For this vehicle, a fresh, new phase has begun.

Let's take a look at the major changes, one by one:

The styling is superb, particularly in a number called the Impala, displayed as a dream car at the General Motors Motorama in 1956.

"We won't fret," remarked a Chevrolet man, picking his words cautiously, "if anyone refers to the Impala as a Baby Cadillac."

They shouldn't. Named after a fleet African antelope, the Impala *does* resemble a Caddy. The styling department has socked too many wind-splits into the convolutions of the sheet metal, but even that can't destroy the car's essential beauty. The same skin, minus some of the frivolous embellishments, has been pulled over the rest of the new Chevrolets—the Delray, Biscayne and Bel Air series. The Impala is billed as a part of the Bel Air line, but it's an even bet that it will stand on its own by 1959.

The names Delray and Biscayne are probably the products of some moonstruck individual on the Chevrolet payroll who shuddered at those bleak series numbers, the 150 and 210, for which the romantic tags were substituted.

The frame of the new Chevrolet (like the Cadillac's) is an X with no side rails. It has greater resistance to twisting and bending. It allows a lowering of the car without introducing wide door sills at the rear-seat "stepdown." The '58 Chevrolets are, in some cases, almost five inches lower than their '57 counterparts.

The entire body is beefed up. Cross members under the seats, where nobody looks anyway, hold body to frame. To the suspicious mind, all this smacks of a step toward the eventual elimination of the frame entirely.

The propeller shaft is now in two pieces, joined by a tightly anchored middle universal joint. That's partly to reduce what engineers know as "drive-line disturbances from unbalanced forces." In plain English, that means whip. One ounce of off-center weight in a long shaft two inches in diameter becomes almost 50 pounds of whip at 4,000 revolutions a minute. The shorter each section of shaft, the less chance there is of whip.

Despite coil springs front and back, Chevrolet's divorce from the torque tube,

Top of the line, the new Impala comes either as

THREE TAIL LIGHTS (running light, back-up, stop and turn) are an Impala identification. Standard Chevy cluster is shown at right.

NEW FUELING POSITION above the bumper leaves rear fenders unblemished. Except for wagons, all models hold 20 gallons—up four.

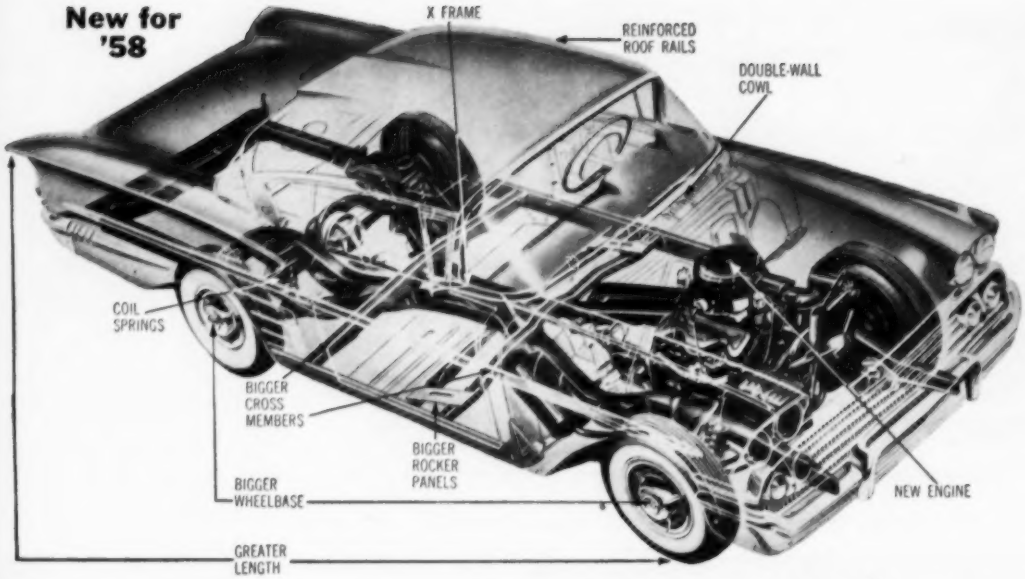
a convertible or as this svelte sport coupe. Its performance is comparable to its sleek looks.

REAR SEAT of Impala, styled for only two passengers, features a fixed armrest with an extra radio speaker in back rest above it.

DISHED WHEEL is sports type. Automatic drive quadrant reads P R N D Gr (for Grade Retarder); standard quadrant substitutes L for Gr.

SPARE TIRE rides behind the wheel well, expanding trunk width to a whopping 50 inches; depth, including shelf, is almost five feet.

DUAL HEADLIGHTS (of course!) are eyebrowed; the gridded grille has concave ribs; top of the hood is completely free of ornamentation.



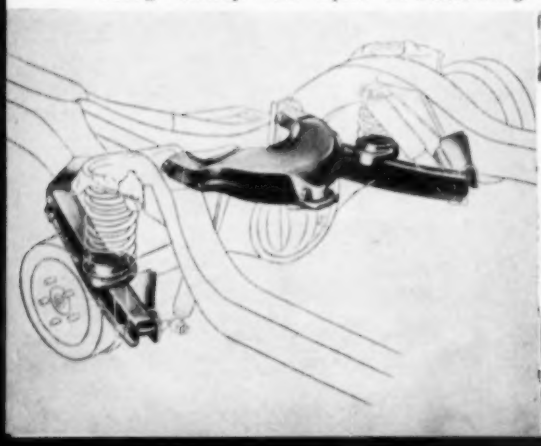
begun in 1955, is now complete. How the driving power of the rear wheels is transmitted to the frame without rear-end "squat" in takeoff is quite a trick. Different from the Lincoln's (page 114), it's pictured in the accompanying illustrations.

These coil springs all around, the biggest change in the car's suspension since the introduction of the "knee-action" ride in 1934, bring a two-fold explanation from Chevrolet engineers. The first, and obvious, reason was to accommodate optional air-cushion springs. It's hard to substitute air bags for leaf springs.

The second part of the explanation is ride improvement. They intercept more road shock between tires and body. The new ride results from boosting the amount of jounce-rebound wheel travel in front and matching up the bow and stern spring rates.

Air springs are no mere sales come-on. They work. Their principal purpose is to keep a car level regardless of the inequalities of load. The weight of people boarding a front seat is just about equally distributed between front and rear springs. But four-fifths of the weight of people boarding the rear seat is supported by the rear springs. That's the reason the back ends of cars supported by steel springs, when there are no rear-seat passengers,

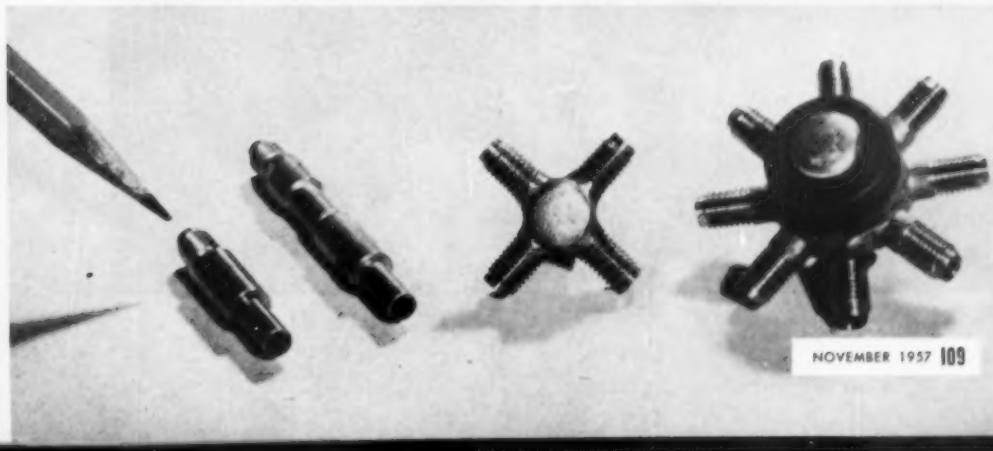
THREE CONTROL ARMS, two outboard and one at differential, link axle to frame, almost eliminating "windup" and "squat" in accelerating.



AIR SPRINGS, an option, make the car ride level fore and aft regardless of differences in rear-seat load or luggage in the trunk.

NEW THREE-CARBURETOR ENGINE has valve-cover cutouts to expose the plugs and reduce their temperature; heads are flat and the combustion chambers are machined into the block.

FUEL-INJECTION CHANGES FOR '58 improve idle, add snap to performance. New nozzles, compared with old (at pencil tip) are longer, extend farther into the manifold. Single, eight-outlet fuel distributor (right) replaces two of four outlets each, prevents dribble at idle.



RESTYLED CORVETTE has four headlights and transverse louvers on the hood. Loaded, it's 51 inches high. Bumpers now attach to the frame. A four-speed manual box is available.

hump up—the springs must be tailored to a rear-seat load. When passengers climb in there *and* luggage is crammed into the trunk, the springs sag. The rear window often is scuttled to the point where an inside rear-vision mirror is useless.

Air springs automatically pump up to compensate for the load.

Second to the level ride as a reason for air springs is their shock-absorbing characteristic. Almost no road shock at all reaches the steering wheel. Moreover, on hard jounces, the car body goes up once and comes down once. That's all. There are none of the dying tremors of oscillation that steel springs impart.

"That's it," remarked a Chevrolet engineer last August at the General Motors Proving Ground near Milford, Mich., as we hit a pot hole in an air-sprung 1958 Chevrolet. The car jounced once and squished into rebound. "It's dead. Feels like putty."

The fact is that Chevy's new steel coils are almost as "dead."

Chevrolet's prime engine news is not their big hunk of hardware that displaces an incredible 348 cubic inches—though it *is* an option—but, rather, what has been done to the fuel-injection system announced a year ago.

Chevy's fuel-injection engine was put on the market, in an excess of anxiety, be-

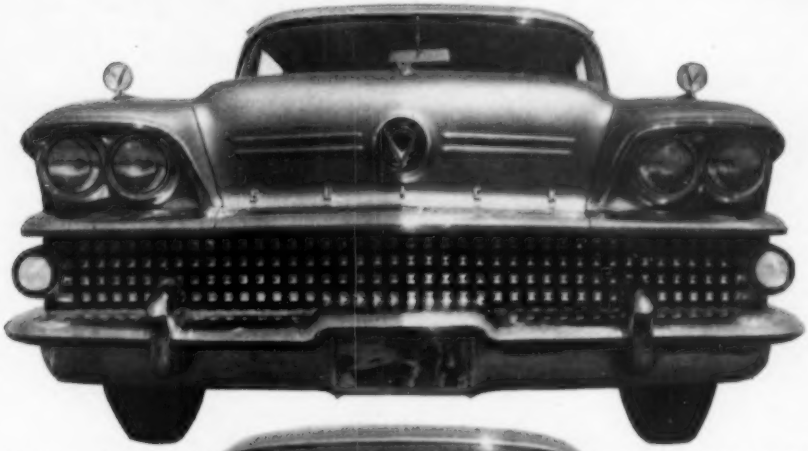
[*Continued on page 270*]

COMPRESSION RATIO of Corvette's fuel-injection engine remains 10.5:1. Dual four-barrel carburetors and special cam are optional.

FENDER SCULPTURING, outlined in chrome and extended back into doors, is retained, but is modified by flush paneling at the wheel cutout.

Buick:

New Look, New Transmission



Identify the '58s by the knobby grille in front and the big, lined bumper in back.

EACH fall, auto manufacturers publish confidential "brag books" designed to fill in employees about the new models. Buick's 1958 brag book contains this boast:

"It has been the practice after introducing a completely new body to do a face-lifting the following year. Well, we have taken our 1957 models and not only face-lifted them but also tail-lifted them and side-lifted them until on some models there is not a single exterior surface the same as 1957."

This refreshing burst of candor stops short of telling why such costly changes were made. The reason: 1957's styles did not lure the customers in normal numbers; Buick lost its cherished third place in sales to Plymouth.

For the 1958 come-back try, Buick brings to the fray these main changes:

- Optional air springs, which render the car's already soft ride even more pillowy.
- New front brake drums, combining cast-iron liners in air-cooled aluminum

bodies, for more fade-resistant brakes.

• A fancy new form of Dynaflow automatic transmission that gives better acceleration and downhill braking.

• A host of "appearance" changes in addition to the new sheet metal—a dramatic new grille, dual headlamps, new wheel covers and bumpers, and different rear windows. Someone at the factory, taking his courage in hand, has eliminated two historic Buick trademarks—the full rear-wheel cutouts in the sheet metal, and the row of little portholes or woodpecker doors along each side.

How does it seem? The extent of the changes need not alarm Buick lovers. Its engine still purrs like a kitten at cream. It still storms away from a traffic light with fine vigor. Its ride still feels as if you had had a shot of anesthetic in the rump—you can't feel a thing. The hood line has been raised—alas!—to give the driver a greater sense of power, at the cost of forward visibility for not-so-tall drivers. Offsetting that, the Buick people—bless their hearts!—have kept horsepower and torque exactly at 1957 levels.

Floating on air. To car designers, air suspension has the big advantage of eliminating a painful compromise. With steel springs the designer must choose between a low spring rate (soft, easily deflected springs) to get his good "boulevard ride" and a high spring rate (stiff, tight springs) to get acceptable handling on rough roads or with heavy loads. His painful compromise arises from the fact that any given steel spring has essentially only one rate.

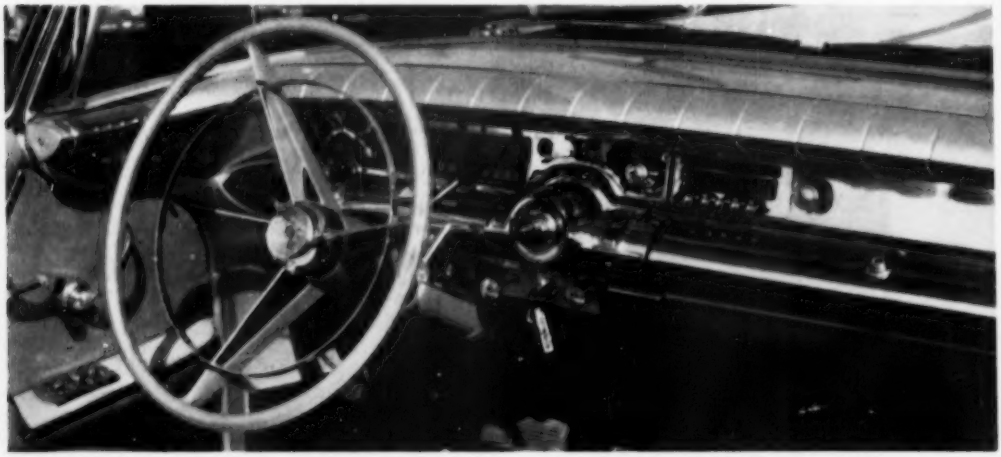
This isn't true with air bags. On an "Air-Poise" '58 Buick the spring rate is 60 percent softer *for the first inch* of wheel deflection. This gives the pillowy, smooth-road ride. But beyond that inch the spring rate progressively stiffens, reducing wheel shake and rebound when, say, the car slams at speed along a hole-pocked road.

Aside from variable-rate springing, air suspension can have the additional virtue of providing a constant "trim height" regardless of load. The car doesn't list like a tramp steamer when you pile in people and baggage; its headlight aim is not fluked with every variation in load.

To attain these virtues, the suspension uses four air bags that normally work at some 100 pounds' pressure; a piston compressor of five-cu.-in. displacement that can deliver air at 290 pounds; a big, sturdy air tank located between the front frame members; and an elaborate network of air lines and control valves. Despite the system's complexity, it will not, Buick thinks, give owners much trouble in service.

Found: a use for fins. Ever since Buick introduced its torque-converter Dynaflow transmission a decade ago, holding back on downhill running without excessive use of the brake pedal has been a problem. The box just didn't make much use of engine drag. As horsepower

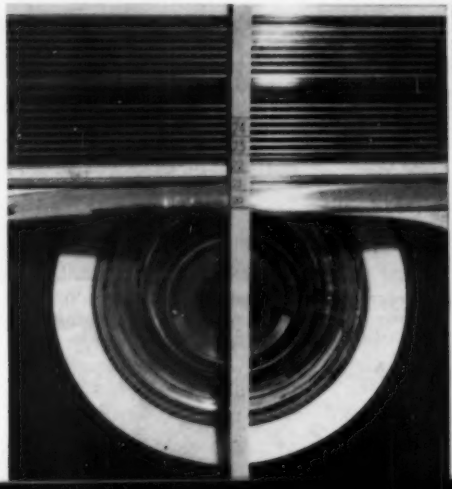
[*Continued on page 246*]

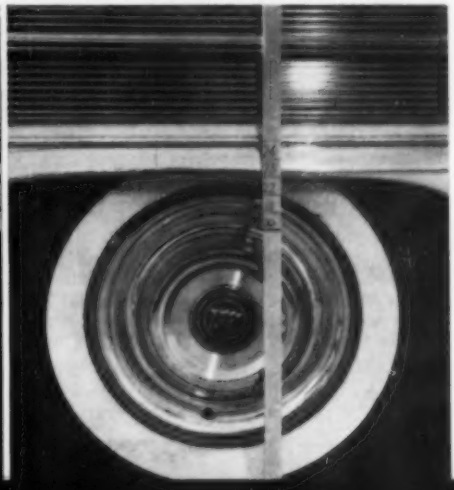


Steering wheel provides more knee room. Instrument panel roll has soft nose for safety.

Compressor (arrow) pumps air for air-bag springs, stores it in the reservoir at lower left.

HIGH-RAMP DRIVEWAYS or crowned roads present no clearance problem to a Buick equipped with air springs. Flipping a switch raises body a full four inches above normal height.

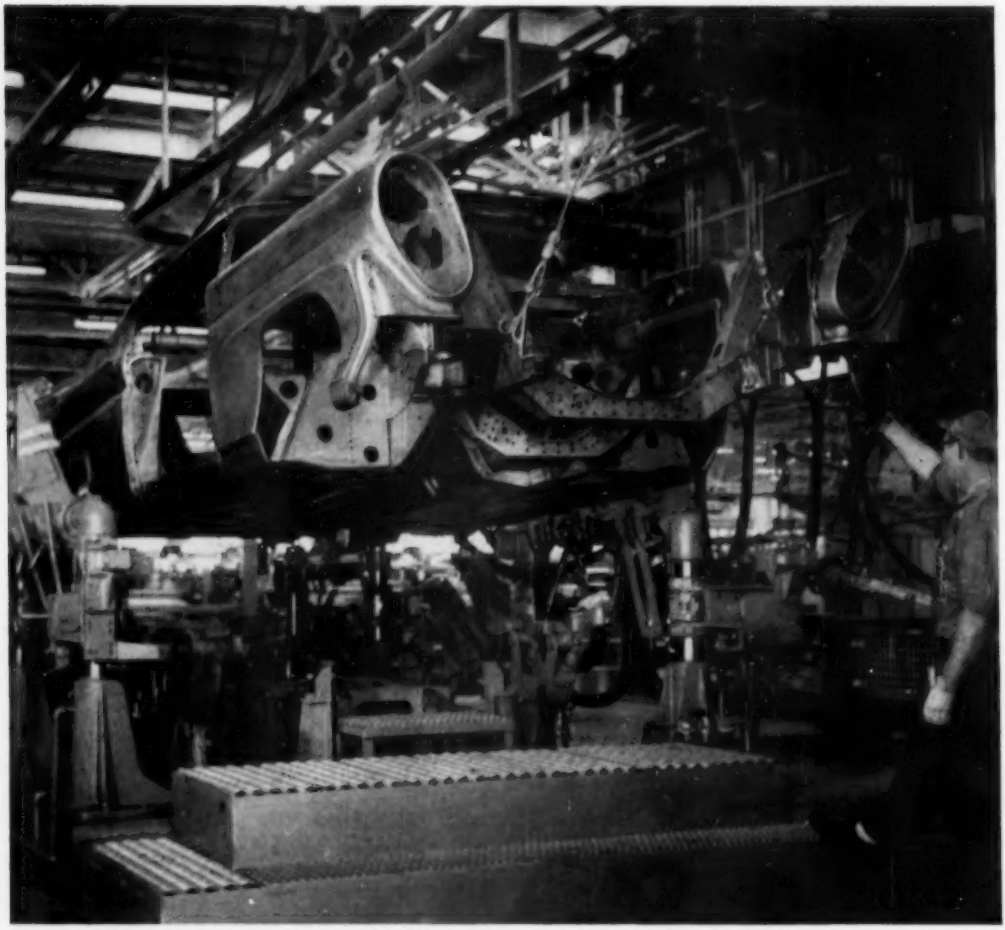




Lincoln: World's Longest Car

Beefy and powerful, '58 models may forecast an industry trend: They've thrown away the frame, fastened machinery to the body

NEW LINCOLN stretches 229 inches from bumper to bumper, stands only 56.5 inches high.



ENGINE CRADLE IS BUILT into body itself. The panels and beams for this whole structure are put into a "buck" or jig, held rigid by hydraulic clamps and then spot-welded. Cups for coil springs are in sheet metal. In front, bumpers and suspension mount in the side rails.

THE Lincoln division of the Ford Motor Co. has announced its second covey of dew-fresh cars in two years, and a first glance at them inspires the suspicion that the people who designed them had gone off their rockers.

At a time when there are less than a dozen states left in the Union with unrestricted highway speeds, the 1958 Lincolns have a stupendous 375 horsepower.

At a time when automobiles are fighting for space on the roads, the 1958 Lincolns are the world's longest production, sedan-type passenger vehicles. Measuring more than 19 feet between bumpers, they are seven inches longer than Cadillac's forthcoming 1958 coupe, 12 longer than Caddy's four-door. They are five inches longer than Chrysler's 1958 Imperial.

But in point of fact, the size and power probably are the least of the attributes of the new Lincolns. Eight years ago Ford Motor began planning for revolutionary changes in this automobile, and now they have come to pass:

- For the first time in 19 years, a bill of divorcement from the Mercury is in effect. The Lincoln has a production line of its own. It's free of association with a middle-priced car.
- For the first time in its history, the car has no frame—the body is "unitized."

Incidental to this is the death of the Continental Mark II, Ford Motor's posh chariot for millionaires. From now on, the Continental will be a Lincoln by another name, only slightly plushier, slightly costlier, slightly different in outward appearance.

The real story of the 1958 Lincoln lies in its construction.

It's a harbinger of things to come in the automobile-manufacturing business. American Motors (and one of its predecessor components, Nash) has built unitized bodies since 1940. Design and production engineers of both General Motors and the Chrysler Corp. are showing more than a casual interest in Lincoln's mammoth new manufactory at Novi, Mich. The bodies of the 1958 Ford Thunderbirds will be unitized.

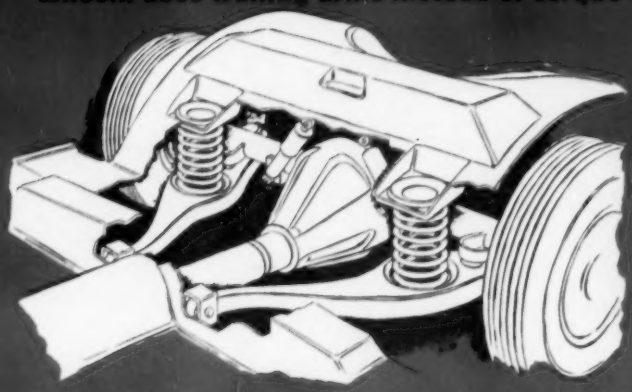
Three-quarters of all European cars have unitized bodies. That includes the importations made by U. S.-owned companies—the English Fords and GM's British Vauxhalls and German Opels.

For the manufacturer, the unitized body simplifies car production. For the motorist, it practically eliminates body squeaks. It is believed to provide greater safety in collision. It makes for a quieter ride. It also—let's be dispassionate—complicates the job of sheet-metal repair.

A kinship exists between the Lincoln's construction and that of an airplane. Part of the strength of the Lincoln's body is in the stressed skin that forms a rigid box. Part of it is in longitudinal stringers, or beams, and heavy cross-members that are integral with the sheet metal. The Lincoln's engine cradle bears some resemblance to that of an airplane.

There were skeptics among Lincoln's body engineers when the new factory began running sample copies of the 1958 cars through the production line. Would the body shell take the weight of that

Lincoln uses trailing arms instead of torque-tube drive



REAR COIL SPRINGS normally call for torque-tube drive, as in Buick and American Motors cars. Here trailing arms, hinged to a rear cross-member, transmit torque from axle to body. Achieving unusual fore-aft stability in starts and stops, this propulsion method is used also in Cadillac's Brougham, in the Renault, Citroen and some Lancia models.

heavy engine without bending? Would the doors continue to fit?

The first 75 automobiles carried bits of masking tape pencilled with arrows at points where the doors mated with the bodies. The engines were dropped in. The arrows didn't budge. Then some of the cars were driven over wring-out roads at Ford's Kingman, Ariz., desert proving ground. The arrows still didn't budge.

For production-line engineers who accepted hammers and two-by-four timbers as tools necessary to car manufacture, this was a revelation. In conventional body-building, the hammer knocks the skin into place where the die has erred. The timber on a fulcrum springs balky sheet metal into mating position. In the new Lincoln plant, there are no hammers, no two-by-fours.

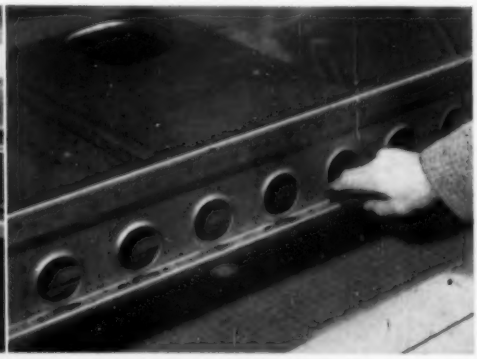
Coil-spring suspension all around was a necessary by-product of Lincoln's new type of construction. There's no frame to anchor semi-elliptics in the rear. Optional air bags as substitutes for coil springs will be available later.

The nature of the suspension (see drawing) and torque transmission have a brace of happy by-products. Rear-end squat in fast starts and front-end pitch in braking are just about gone. Axle wind-up hardly exists. And despite its weight and size, the vehicle corners like an MG.

"We started out," said Kurt Hoffman, executive engineer, "under instructions to create a boulevard ride. The fact that we've got a sports car just happened."

The Lincoln's new engine is—you guessed it—right from the same block as

[*Continued on page 248*]



INSTRUMENT CLUSTER is in a special pod (left) jutting out from cowl. A back cover can be removed in a jiffy to service the wiring. The car's body metal is holed through at various points (right) to create different vibration frequencies, prevent drumming from road shocks.

For complete rust-proofing, entire body is immersed in 10,000-gallon tank of primer paint.

ONLY OUTWARD DISTINCTIONS between Continental (above) and Lincoln are a reverse-slanted, retractable rear window (left), plus a latticed grille and back panel and different tail-light (right). For the first time, Continental has a "series"—with hardtops and a convertible.

The Independents:

Engineered for Economy

Does everybody want a rolling palace with a herd of horses under the hood? These makers are betting the answer is No!

FOR 1958 the "independent" auto makers have reached a momentous decision. American Motors and Studebaker-Packard are putting all—or nearly all—their chips on a bet that the U. S. market for smaller, less flossy, cheaper-to-run cars is growing fast.

American Motors, burning its bridges in the big-car field, has unsentimentally killed off two ancient and honorable names: Nash (born in 1917) and Hudson (1909). A car called the Ambassador (now about the size of Ford, Chevy, Plymouth) will still be made, but the big sales pitch will acclaim the Rambler's solid virtues.

Studebaker-Packard is keeping the Packard name alive on a smaller car that reveals an unmistakable kinship to Studebaker. The Commander and President, as well as the Hawk sports coupes, will continue on the assembly line in limited numbers. But S-P is going all-out to promote its 101-hp. Champion and austere Scotsman.

The reason is simple: The independents' bigger cars have not been selling; their smaller cars have been ringing the register loud and clear.

Here's what American Motors and Studebaker-Packard have done to make their economy contenders more formidable competitors for 1958:

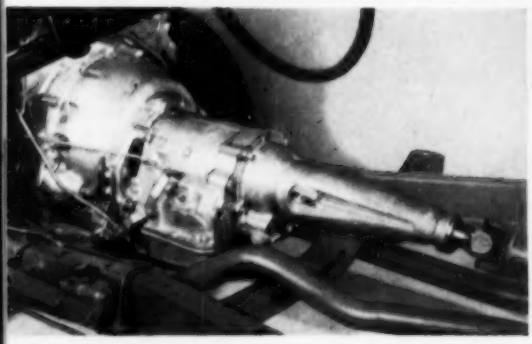
Rambler. Some of the gingerbread has been peeled off the Rambler's styling. It looks sleeker and longer, though it isn't. There are 12 body styles, including hardtops and station wagons. Seats are lower,

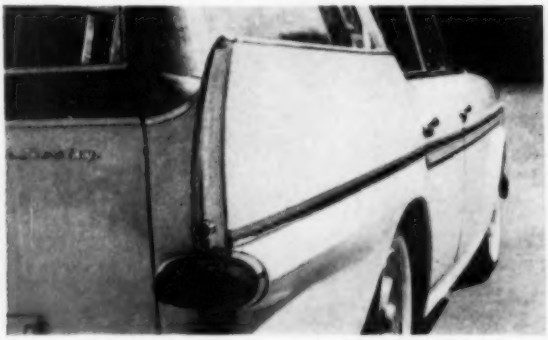
CHAMPION

RAMBLER

TWO HEADLIGHTS are standard, four optional, on Champion. Longer transmission snout (below) helped get rid of two-piece prop shaft.

RAMBLER WAGON with flared fins (below) comes in three horsepowers—sixes rated at either 127 or 138, and a tidy V-8 rated at 215.





New egg-crate grille is most obvious change in the Scotsman, Studebaker's low-cost item.

PACKARD HAWK is a spanking new model with reinforced-plastic hood and weatherproof interior trim (below) that extends past window.

AMBASSADOR LINE, to include a wagon, is new. Features: 117-inch wheelbase with 270-hp. V-8, finned fenders (below), Continental spare.

and are raked back for less erect posture.

Just in case the Rambler prospect hasn't been entirely weaned from his Big Three tastes, the company is prepared to offer a bundle of comforts: a pushbutton automatic transmission (made by Borg-Warner); a pedal-applied parking brake; dual headlights; a 215-horsepower V-8; a recirculating-ball steering gear; a transistorized radio; an anti-spin differential; and air conditioning.

And gosh all fishhooks—tail fins!

To the customer shopping Automobile Row, Rambler salesmen are primed to cite that it's 18 inches shorter than a Ford, Chevrolet or Plymouth, is easier to park, and still holds six persons. The six-cylinder version of the Rambler goes so far on a gallon that it was finally barred from the Mobilgas Economy Run. Unfair competition.

Late this year American Motors is going to revive the 100-inch-wheelbase Rambler it made for a few years and then dropped. The present 108-inch version will be kept on, too.

Like Lincoln (p. 114), American Motors has taken to baptizing its bodies in a primer paint bath. The idea is that immersion, unlike spraying, can get primer to every point where rust might attack.

Studebaker Champion. Still clinging for dear life to that 101 horsepower (and 20-odd miles to a gallon of gas) at a time when anything less than 250 horses is a downright disgrace, the Champion goes on and on like the wonderful one-hoss shay. But a lot of changes have been made in the 1958 model. The car is lower. It has a new grille, new hood, new moldings, and different two-tone treatment. There's more leg room in back.

To maintain headroom in the rear, the floor pan was dropped more than two inches under the rear seat. They got this by lengthening the snout on the transmission. The longer, canted connection reduced the height of the prop shaft. It also eliminated some vibration in the whole propulsion train by doing away with that third universal joint that formerly broke the shaft in the middle.

The Scotsman. The news about this vehicle for the thrifty has Studebaker men walking around mumbling happily to themselves. Announced on the threshold of summer, the first cars off the line were gobbled up like oatmeal in Edinburgh. By July 15, the 1957-model-year production was sold out.

For 1958 the company will more than double the output of Scotsmen that it was thinking about last spring. Don't ask for actual figures. General Motors, Ford and Chrysler would give their eyeteeth to find out.

As befits a car built to save a nickel here and a dime there, the Scotsman has undergone little change for '58. The tail lights and grille are new. So is the lower panel of the front bumper. Cloth replaces woven fiber in the roof lining. The car has two headlights, not four. Unlike the rest of the Studebakers and the Packards, it has no fins.

One dealer sold more Scotsmen than he could get from the factory simply by collecting affidavits from owners that they were getting 23 to 30 miles to the gallon. Among others, a long-time Studebaker fan bought one—Mrs. Eleanor Roosevelt.

The purchase price for either sedan or station wagon remains, of course, the lowest among American-made automobiles. Even Studebaker itself is confounded by the popularity of the wagons. The management figured last spring that 20 percent of the Scotsmen sold would be wagons. The actual total is double.

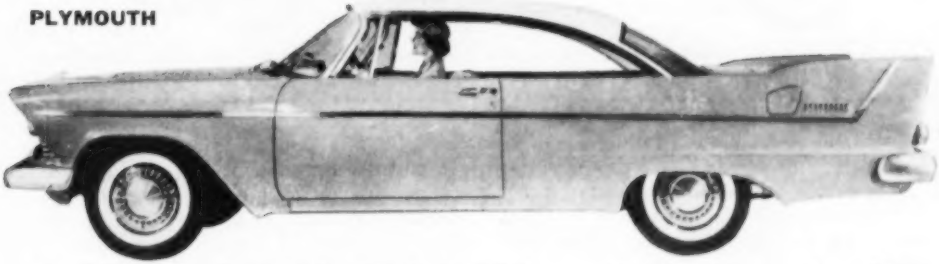
Something else has Studebaker crowing happily. Of the trade-ins on the Scotsman, only four out of 10 have been Studebakers. Of the remaining six, half were Chevrolets, Fords and Plymouths.

American Motors and Studebaker-Packard have a warm, secure feeling about their economy products. They figure that the Big Three—Chrysler Corp., Ford Motor and General Motors—can't afford to produce economy cars because they'd hack into the sales of their regular lines. Moreover, reason the independents, this would prejudice the sales of used cars, and dealers must move used cars to live. As the independents see it, Ford and GM are doing the next-best thing by importing economy cars from Europe in limited numbers.

Just how many motorists, out of the 6,000,000-odd who buy new cars each year, are plunking down their money on economy cars, domestic and foreign, nobody knows. Comparatively, the number isn't big as yet. Will it snowball into a major market? That's what the independents are gambling on. END

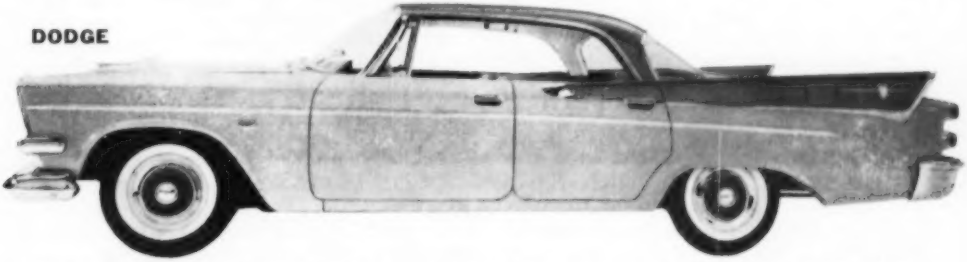
Chrysler Family: New Engines, Fuel Injection

PLYMOUTH



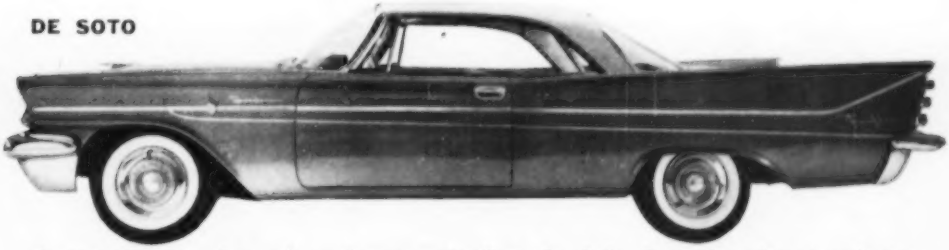
A new V-8 engine, three-speed automatic transmission, provide a shot of getaway benzedrine.

DODGE



Fuel injection is an option, and a new safety fluid practically eliminates brake fade.

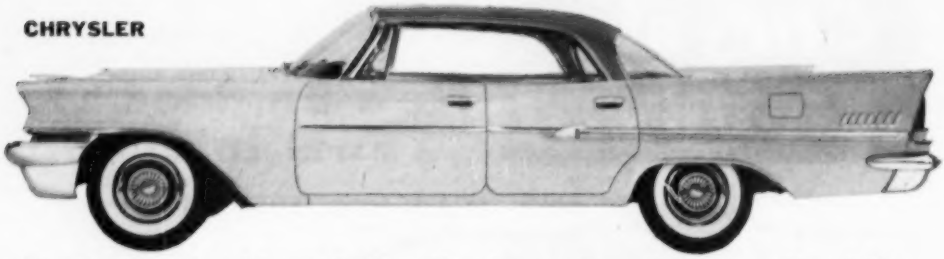
DE SOTO



A new power-steering unit, no longer protruding aft of the fire wall, self-centers better.

WHEN the Chrysler Corporation took the wraps off its 1958 cars late last month, they also unveiled a chrome-plated question: If a manufacturer has a good thing, should he run the risk of changing it much?

The 1957 Chrysler line cars certainly *were* a collection of good things. They changed the tail fin from a bit of French poodle ornamentation to a symbol of advanced styling. They made a virtue of car heights that made you stoop to enter. And—the payoff—they sold. The Plymouth, in particular, sold. It shellacked



The New Yorker's stainless-steel side molding incorporates an identifying gold medallion.

the Buick, previously in third place in popularity, for fair.

The Plymouth for '58, as with the rest of the corporation's lines, has received no radical changes. Still, plenty has happened to it:

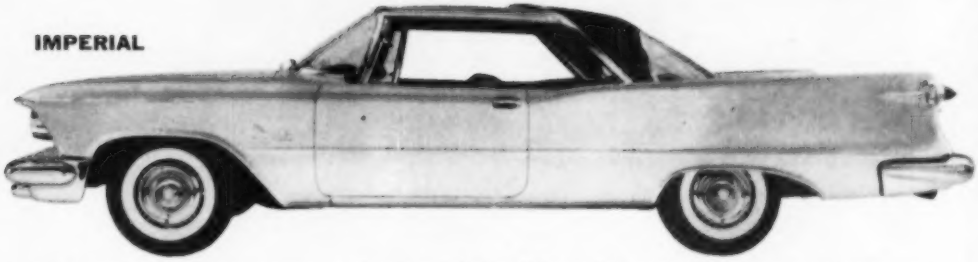
- Dual headlights in each fender, a new treatment on the tail lights, replacement of the choo-choo lower grille by horizontal bars; new fender ornaments; new wheel covers.
- An increased use of tinted or polished aluminum for outside trim, such as that outlining the tail lights and insetting the rear fender on the Belvedere series.
- A new steering wheel; rear-view mirror relocated for better visibility.
- A reduced radius on the curve of the back-seat cushion for more entrance room, and a seat construction that gives more back-seat foot room.
- A new V-8 engine of 350 cubic inches [PS, Oct.], strictly optional, is available on all models, all series. The Bendix fuel-injection system [PS, Mar.], also strictly optional, can be had on this engine, if you've got the money. The standard installation is an engine of one displacement, 318 cubic inches, for all V-8 Plymouths—instead of last year's stepped-down sizes for stepped-down prices. Differences are confined to carburetion, camshafts, exhausts. The flathead six is unchanged.
- A three-speed automatic box on all cars instead of on the Belvedere only—optional, of course.
- A lighter, more compact power-steering unit.
- One more leaf in the rear springs.

Dodge, De Soto, Chrysler, Imperial—the rest of the Chrysler Corporation stable—share with Plymouth some ornamentation and engineering changes.

Anodized-aluminum extrusions have been used here and there. Hardtops in the Dodge, Chrysler and De Soto, and in all models of the Imperial, have double-

NEW FABRICS grace all Chrysler Corporation cars, and rear-window defrosters are optional.

DOUBLE-WRAP WINDSHIELDS come on all Imperials, and on Dodge, Chrysler, De Soto hardtops.



The engine has more power, and a limited-slip differential gives footing in mud or snow.

wrap (or pompadour) windshields, expanding the glass area by 10 percent.

A new power-steering unit, lighter and more compact, has been designed. It's all snugged in at the base of the steering column without this year's protrusion into the passenger compartment. It's a bit more self-centering. The corporation in 1957 sold power steering faster than the things could be built. Plymouth alone installed 140,000—five times as many as in 1956.

Except for those cars on which the new "B" engine is available as standard equipment or an option, power-plant displacements, compression ratios and horsepowers remain substantially the same. The biggest of the corporation's engines is the 392-cubic-inch job for the New Yorker and Imperial. That it's unchanged may in itself be a commentary on an ebbing "horsepower race."

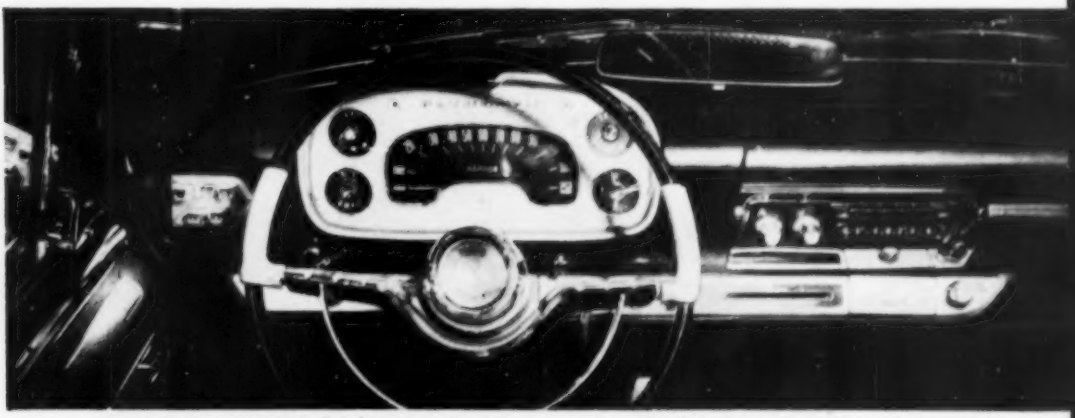
Fuel injection is available on all Dodges (as well as Plymouths), but in the De Soto only on the Adventurer—the opposite number to Plymouth's Fury and Dodge's 500—and in the Chrysler only on the 300-D. Imperial sticks to carburetors.

A limited-slip differential is offered by Chrysler Corp. for the first time. It's similar to a conventional differential except for friction plates that clutch the differential case to the axle shafts. The system has four pinion gears in place of one.

There's a new safety brake fluid with a minimum boiling point of 400 degrees F., higher by 100 degrees than most present-day fluids. The corporation says it practically eliminates brake fade from vaporization of the fluid.

The Chrysler management will be standing first on one foot and then the other for the next two or three months waiting for the answer to the question:

When you've got a good thing, should you change it much? END

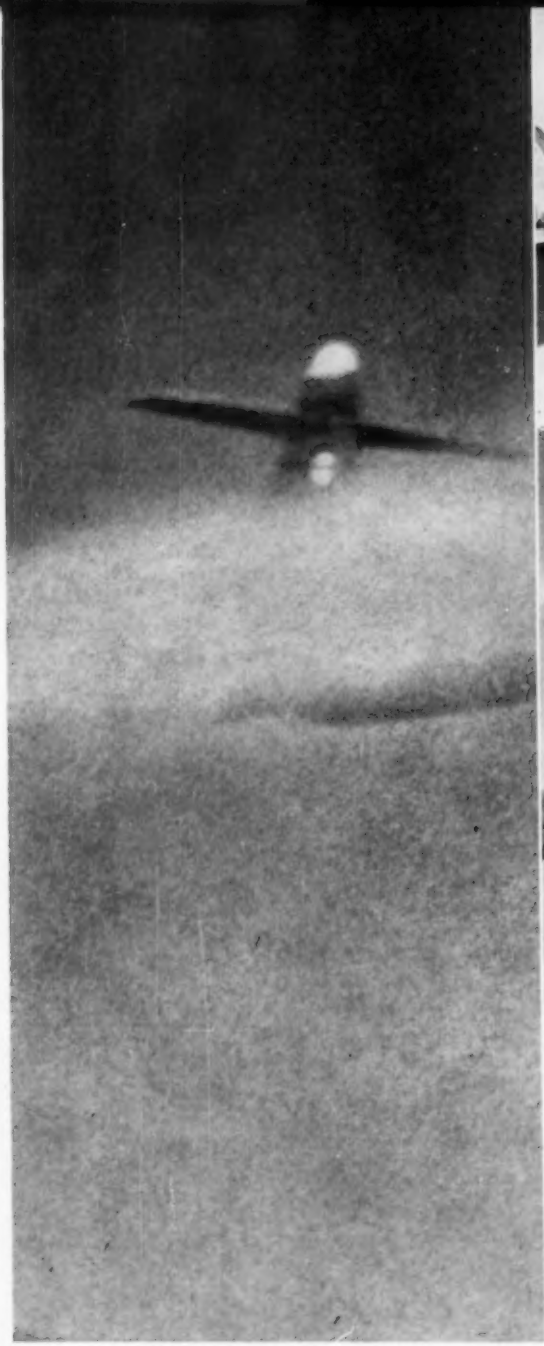


NEW METAL TEXTURES brighten up the instrument panel. Rear-vision mirror, moved nearer and to the left from the center of the windshield molding, gives better visibility.

Picture News
IN THE WORLD OF SCIENCE

World's first air-to-air atomic rocket is fired

SECONDS after the Genie missile at left was launched, its atomic warhead exploded 18,000 feet above Yucca Flat, Nev., with a bang equal to about 2,000 tons of TNT. The Douglas rocket was fired from a Northrop F-89J Scorpion. At top, right, is the crew, AF Captains Eric



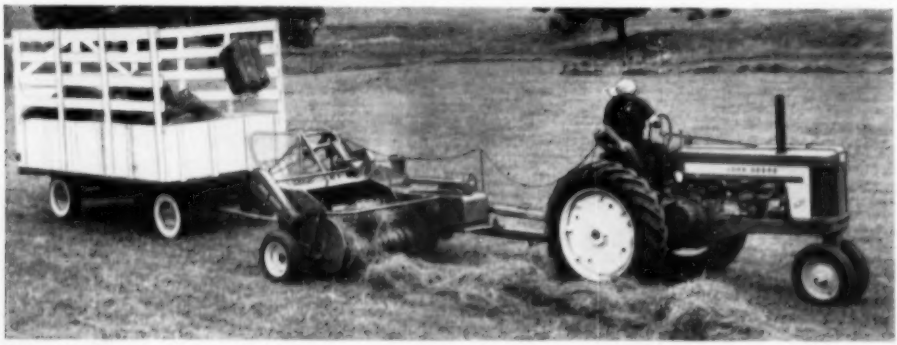
Hutchison, pilot, and Alfred Barbee, radar observer and weaponeer. Below them is the fireball, and at bottom five officers, wearing no protective clothing, who stood at Ground Zero during the blast, indicating that the MB-1's detonation involves no danger to people on the ground. But even a near miss could destroy a fleet of enemy bombers.

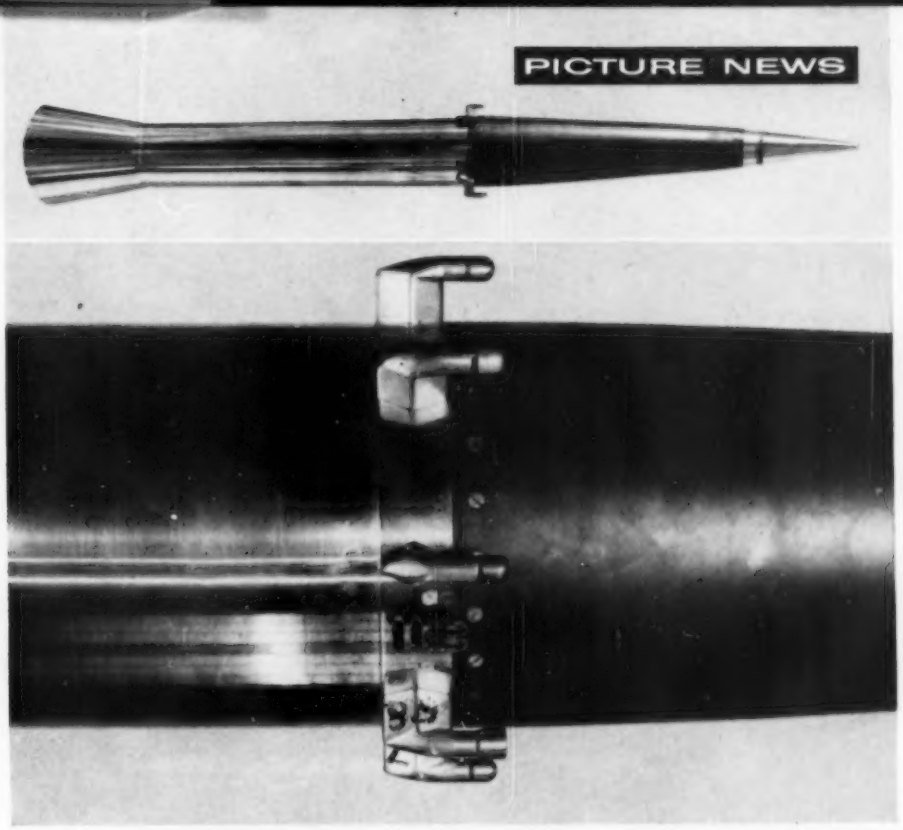
1958 Volkswagen gets more glass, new interior

A REAR window doubled in size, a narrow-post, wider-view windshield, and wipers sweeping more space are new on these 1958 VW's just received from Germany. Other changes: a new dash, U. S.-type gas pedal, improved brake leverage and synthetic-leather-covered doors.

Hay baler speeds up farm work by loading own trailer

THIS new one-man farm machine not only ties a field of mown hay into neat bales but tosses them automatically into the air, to drop into a wagon pulled along behind. Its makers, Deere & Co., Moline, Ill., say that the device cuts hay-storing labor in half.



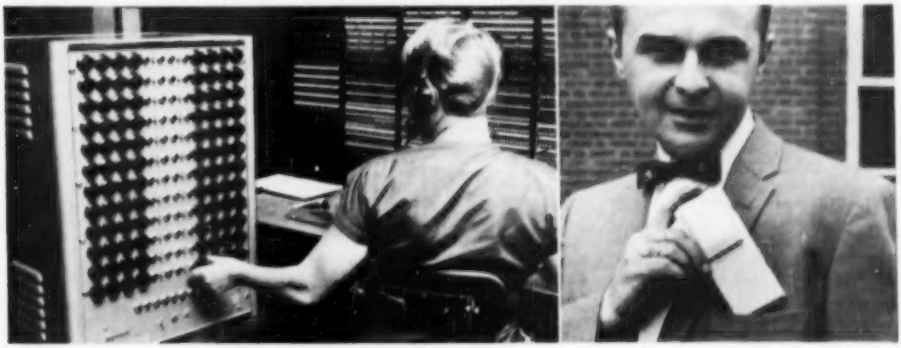


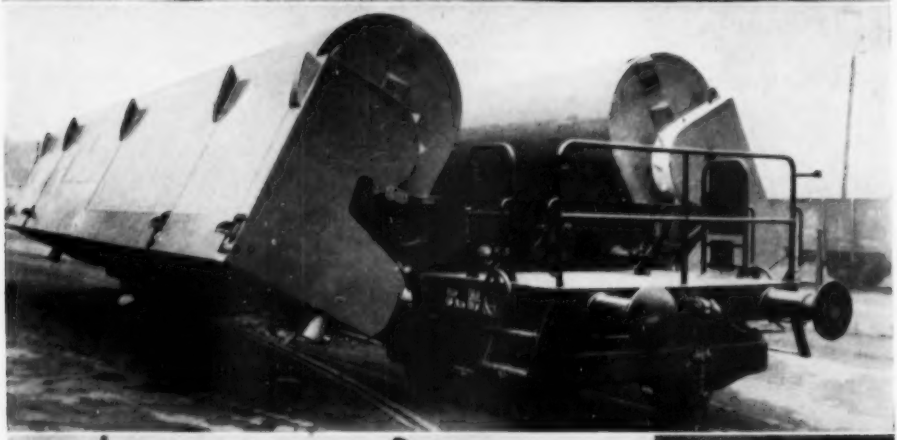
"Flying crucible" tests supersonic-missile metals

GIRDLED with sample-carrying probes, this experimental rocket helps scientists to compare the resistance of various metals and alloys to burning up when a supersonic missile meets the heat barrier. Test specimens, with round and flat faces, are attached as in the close-up.

Pocket radio calls you to phone eight miles away

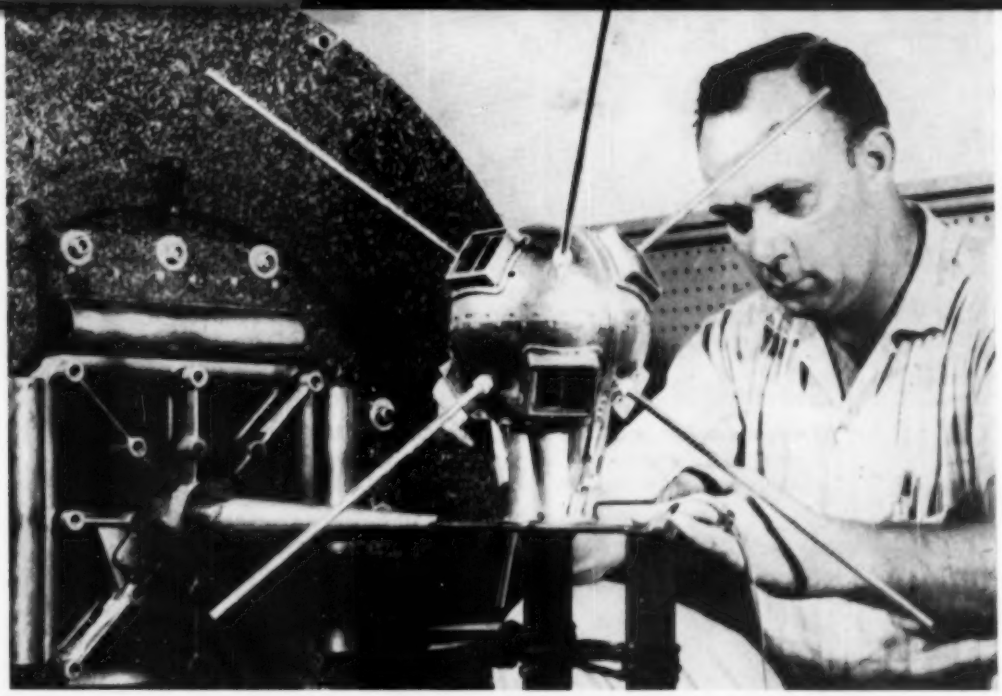
A TINY transistor signal receiver that whistles when its coded frequency is tuned in is being tried by Pennsylvania Bell to notify salesmen and repairmen—as far as eight miles away—of phone calls. Unlike hospital-to-doctor service, it responds only to its own frequency.





Side-dumping freight car takes to water, too

THIS hopper vehicle saves costly transshipment by doing double duty for its owners in Germany, where hauling coal, coke and ore often requires both rail and water transportation. Mounted on railroad tracks, the car splits down the middle to unload more than 50 tons of cargo at both sides of the track. Dismounted at a waterway, it becomes a barge.



Baby satellite has ports to test solar batteries

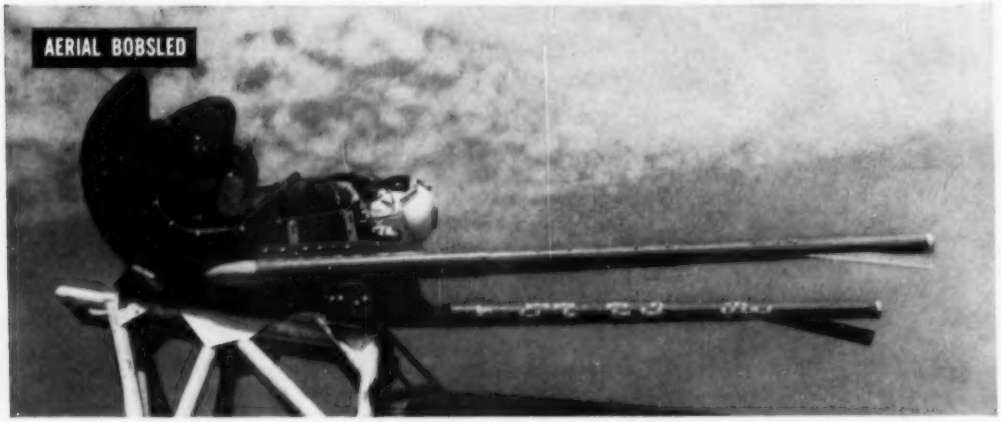
A SIX-INCH satellite has been developed by the Naval Research Laboratory as a test vehicle to ride early Vanguard rockets before the bigger 20-inch "moon" is launched next year. Windows are housings for solar batteries that might supply power for later satellites.

Outboard power pack does swimming for skin diver

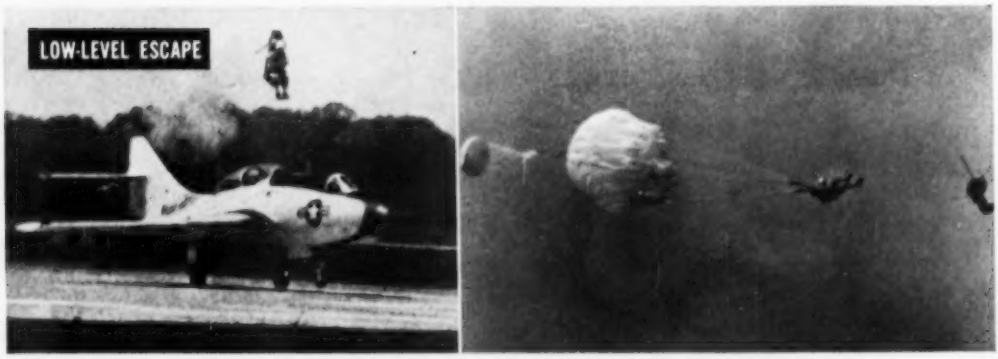
How to have fun under water without work is being demonstrated by this "fish man" at Silver Springs, Fla. The Bludworth Marine Power Diver he is steering is battery operated and enables him to climb, dive, bank and roll with fingertip control at depths to 180 feet.

Three new ejection seats make jet flying safer

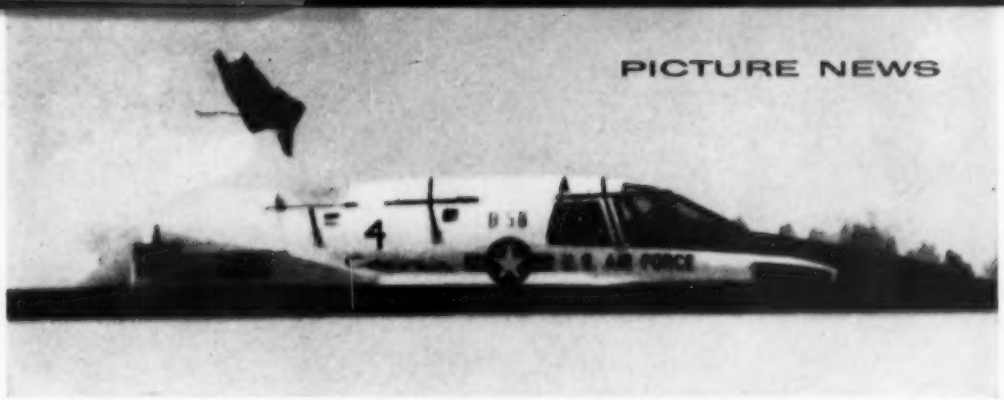
RAPID-FIRE bail-out of supersonic-bomber crews is sought with an ejection system designed for the three-man B-58 Hustler—world's fastest



. . . the dummy pilot in this second new bail-out seat are important in tests. In this seat, intended for supersonic fighters such as the Convair F-102A, the pilot is ejected prone and then propelled feet first by an



. . . A third seat, built in Britain for safe bail-out from jets at low level, is the first of its type demonstrated in the U. S. with a human occupant. Here Flight Lieut. Sydney Hughes of the RAF is catapulted



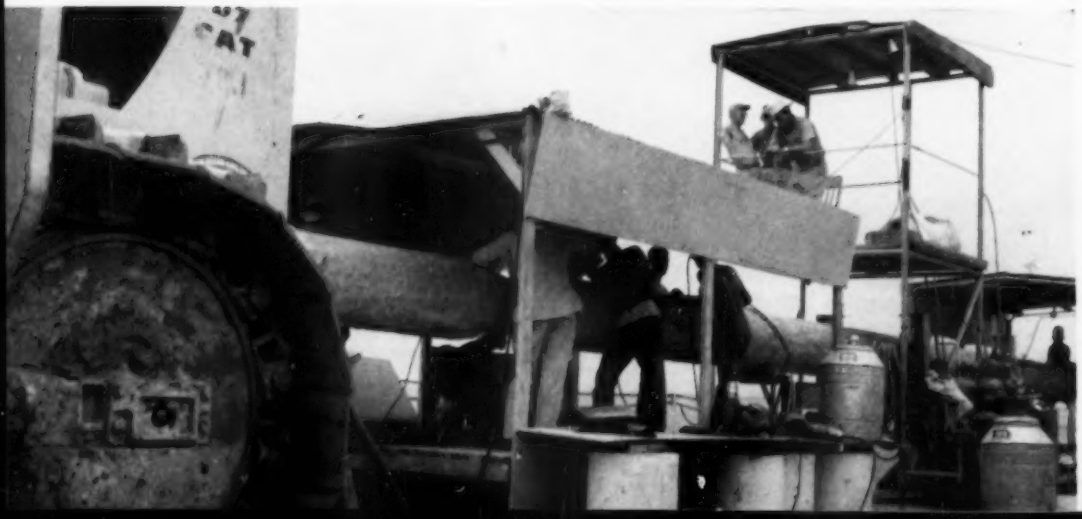
bomber. Tried out here on a rocket sled built like the Convair plane's nose, it ejects three dummies, one at a time, in the space of seconds while traveling faster than sound. Air-shock effects on these and . . .

automatically fired rocket. Twin finned booms, which telescope into the back of the seat when not in use, provide greater stability during hurl-out than previously used stub rudders and horizontal stabilizers . . .

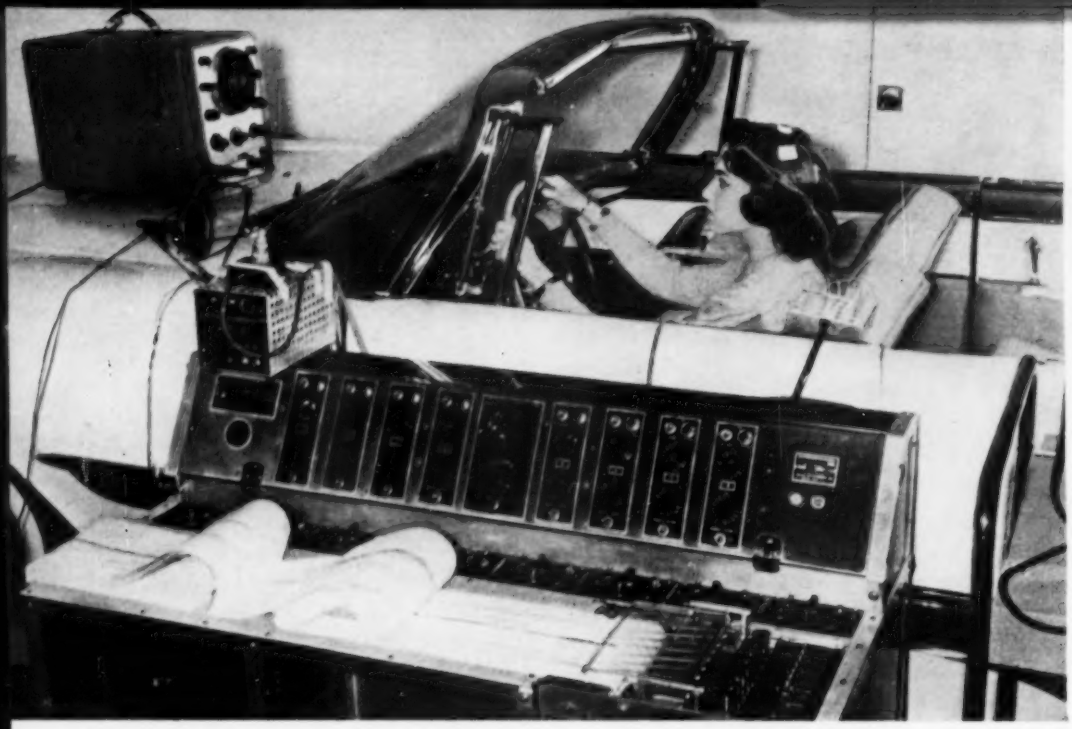
from a Grumman F9F-8T on a runway. Next, he leaves the seat as his parachute opens. Then he starts his descent and finally (far right) lands in a roll. The U. S. Navy is adopting it for carrier-based jets.

Floating ramp lays gas pipeline under Gulf waters

FROM a Louisiana beach to a gathering platform in the Gulf of Mexico offshore oil fields 7½ miles away, the first underwater natural-gas pipeline is being laid. When completed by Transcontinental Gas Pipe Line Corp., it will bring in gas for the New York-New Jersey-Philadelphia area. The big ramp barge (upper left) laying the line to the platform



(right) is a floating production line. A 40-foot length of coated pipe is lifted by crane from another barge alongside, welded to the line (below, left), put through various re-weld and X-ray test stages and then taped and cemented at the joint (lower right). Meanwhile, the ramp is propelled forward, sliding the continuous line to the bottom, where it settles in a covered ditch dug by a powerful jet stream.

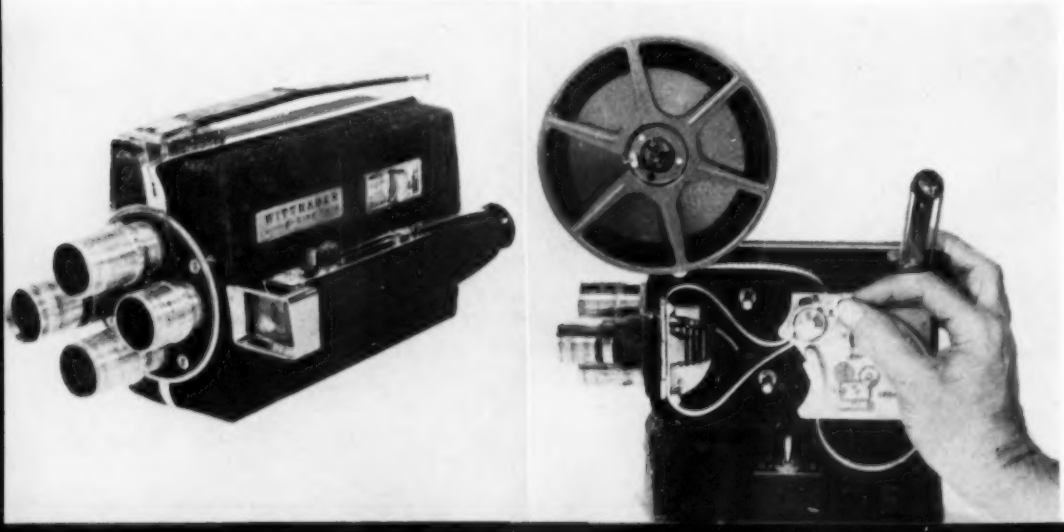


When do drivers get drowsy? Brain-wave tester tells

USING an electroencephalograph to record the brain waves of the operator of this motionless car, Chrysler engineers and experts at Detroit's Harper Hospital study driving fatigue. Tests, in an atmosphere of simulated traffic noises, show drowsiness after 1½ hours at the wheel.

New 8-mm. movie camera is a projector, too

TAKE the view-finder side off this camera, lock the body on a power-supply base, and it becomes a projector. It is made by Longines-Wittnauer Watch Co., which this month enters the photographic field. The 8-mm. movie camera is electrically driven, being powered by three flashlight cells when used as a camera and by house current when used as a projector. Cost: $159.50; telescopic and wide-angle lenses extra.



Hot seat warms cold driver

FOR cozy winter driving, this electric pad (on the right-side driver's seat of a British car) can be plugged into a six- or 12-volt circuit. Its two heating elements use about the same current as parking lights. Conway Car Accessories, Ltd., of London, handles the warming device.

Solar clock runs on light

EXPOSURE of the silicon cells atop this clock to the equivalent of a day's light—sun or incandescent—will run it for a month. Developed by General Time Corp., it contains a voltage accumulator that is charged by the solar cells and operates an electric clock mechanism.

Coal scoop is world's fastest

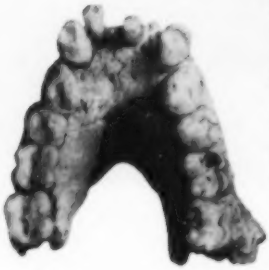
CAPABLE of emptying a 900-ton coal barge in just half an hour, this big multi-scoop conveyor is the world's fastest unloader. Made by Link-Belt Co., it feeds fuel to U. S. Steel's giant coke and chemical plant near Pittsburgh.

This midget car uses sea-going parking lot

So he will have land transportation ready at hand wherever he docks, William Plachter, a Philadelphia automobile dealer, parks his BMW Isetta on the foredeck of his 55-foot motor yacht. When he reaches port, he lowers a gangplank and rides off in the tiny car.

Phones at drive-in restaurant take orders on the run

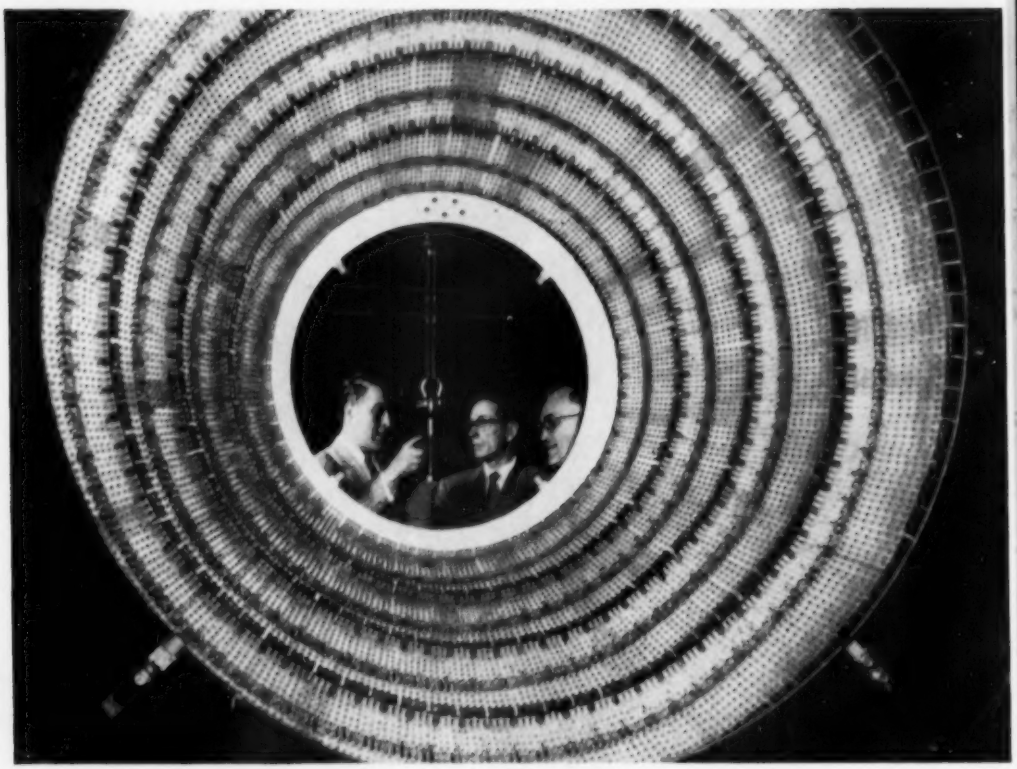
Patrons of this restaurant in Anaheim, Calif., place orders on the way in, pick them up at a delivery window. Food is cooked by microwave: chicken fried in 30 seconds. Don Nixon, the Vice President's brother, is operator. The place cost $430,000, can serve 27,000 a day.



Prehistoric ape may have stood 15 feet high

RECENT discovery in China of a half-million-year-old ape jaw provides a new clue in the study of man's possible ancestry. The fossilized jaw (left) is curved like a man's and about twice the size. The ordinary ape jaw is elongated.

This reconstruction shows the ape, which Chinese scientists say may have stood 15 feet, with two Peking men and an orang-utan of its time. It was drawn for *Illustrated London News*.

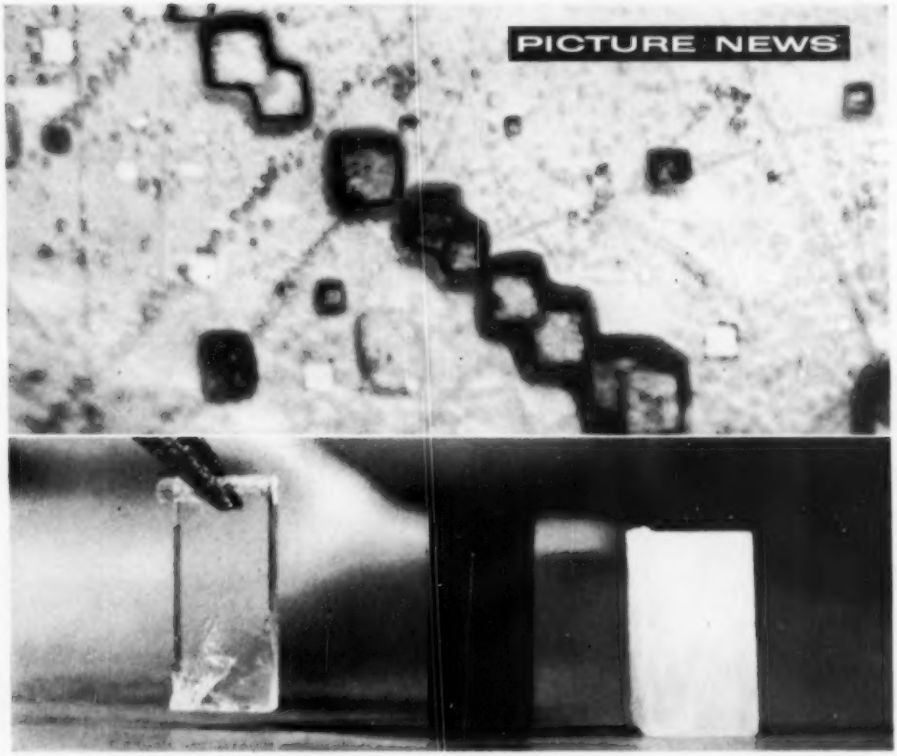


Giant toaster tests noses of supersonic missiles

THIS cone-shaped "toaster" that could handle 7,000 slices of bread a minute tests the resistance of the nose of a missile to friction heat it would encounter on re-entering the earth's atmosphere. The furnace has 1,000 quartz infrared lamps, with heat to over 1,000 degrees.

Little DKW dons flashy fiber-glass sports-car body

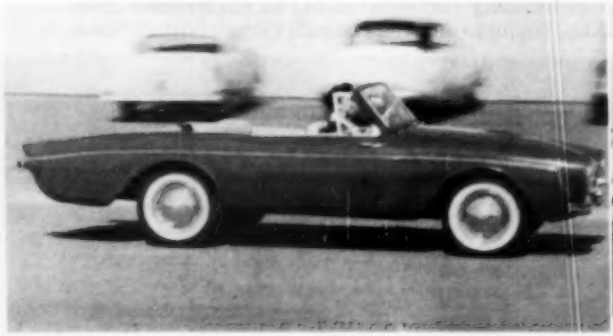
BELOW are three three-cylinder DKW's—at left as they come from the German factory, center with the top cut off, and at right with a new fiber-glass body. Flintridge Motors imports them for reconversion into

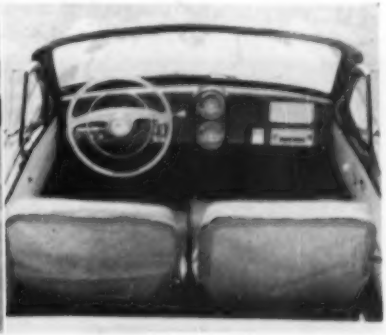


This radioactive world: Now it's square bubbles

THE first square bubbles in nature have been found by a GE scientist —in lithium fluoride crystals irradiated with neutrons in a reactor and heated to 1,112 degrees. At top, the bubbles seen through a microscope; below, the crystals untreated (left), irradiated and heated.

sports models, lengthening the lines while reducing the weight about 350 pounds. Among features are an inverted grille and a steering column (extreme right) out of a dash shifted six inches back. F.O.B. Los Angeles it sells for $3,195, about $1,000 more than the import.





Travelers' take-apart house has parlor, bed and bath

SLEEPING quarters for four, living room, kitchen and bath are all in this 12-by-12-foot house that can be dismantled and stacked on a trailer. Its wood-and-metal frame is on adjustable poles for leveling on uneven ground or providing a carport. In Italy it sells for $1,400.

Big plastic disk to roof U.S. pavilion at Brussels fair

LAID out on the ground below are 2,100 translucent plastic panels for the roof of the U. S. building (drawing, right) at the Brussels 1958 World's Fair. Flown to Belgium from the Kalwall Corp. plant at Man-

Liquid mercury, frozen solid, drives nails into wood

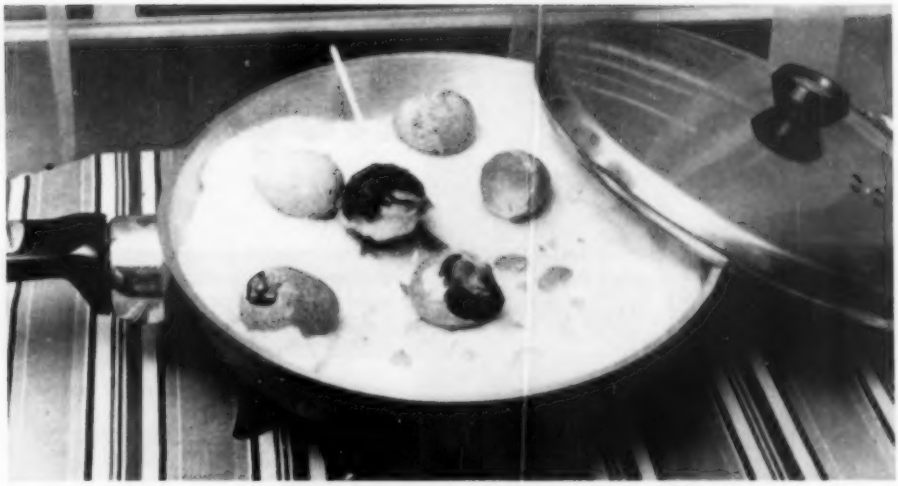
AT THE University of Chicago's new low-temperature laboratory, the scientist above uses a hammer made by solidifying mercury at 346 degrees below. The lab can produce 50 quarts of minus-423-degree liquid hydrogen an hour or eight quarts of minus-453-degree liquid helium.

chester, N. H., they will be reassembled on steel-cable spokes strung between a 66-foot-diameter open metal ring and a 380-foot concrete rim.

Staged from April to October, the fair will represent 50-odd countries and international groups and be seen by 35,000,000 visitors.

Long-legged ferryboat never gets off bottom of sea

WHEELS with tractor treads instead of a conventional boat propeller take this odd-looking vehicle from a resort on the British Devonshire coast to a nearby island. An engine on the passenger deck drives two sets of tractor wheels through a system of chains and gears.

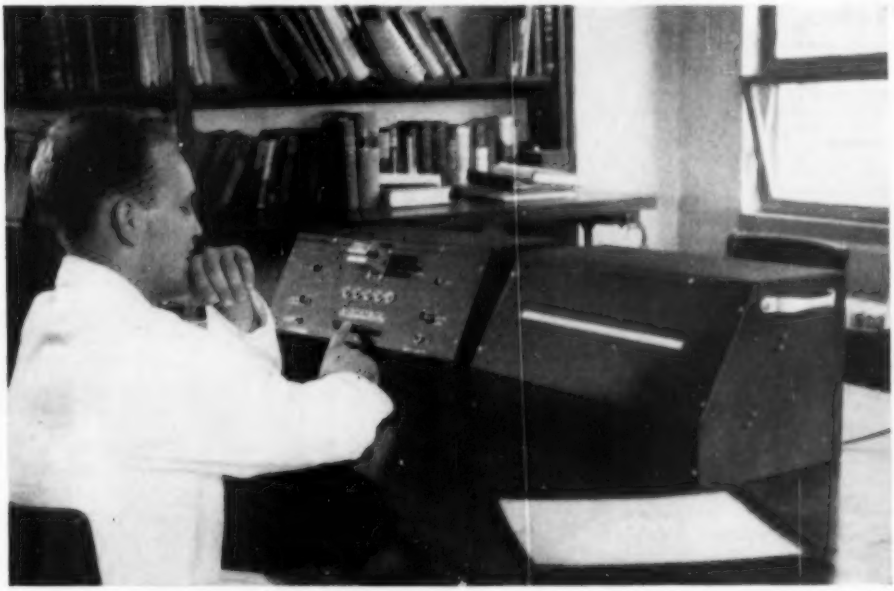


Eggs fried or hatched—electric skillet can do both

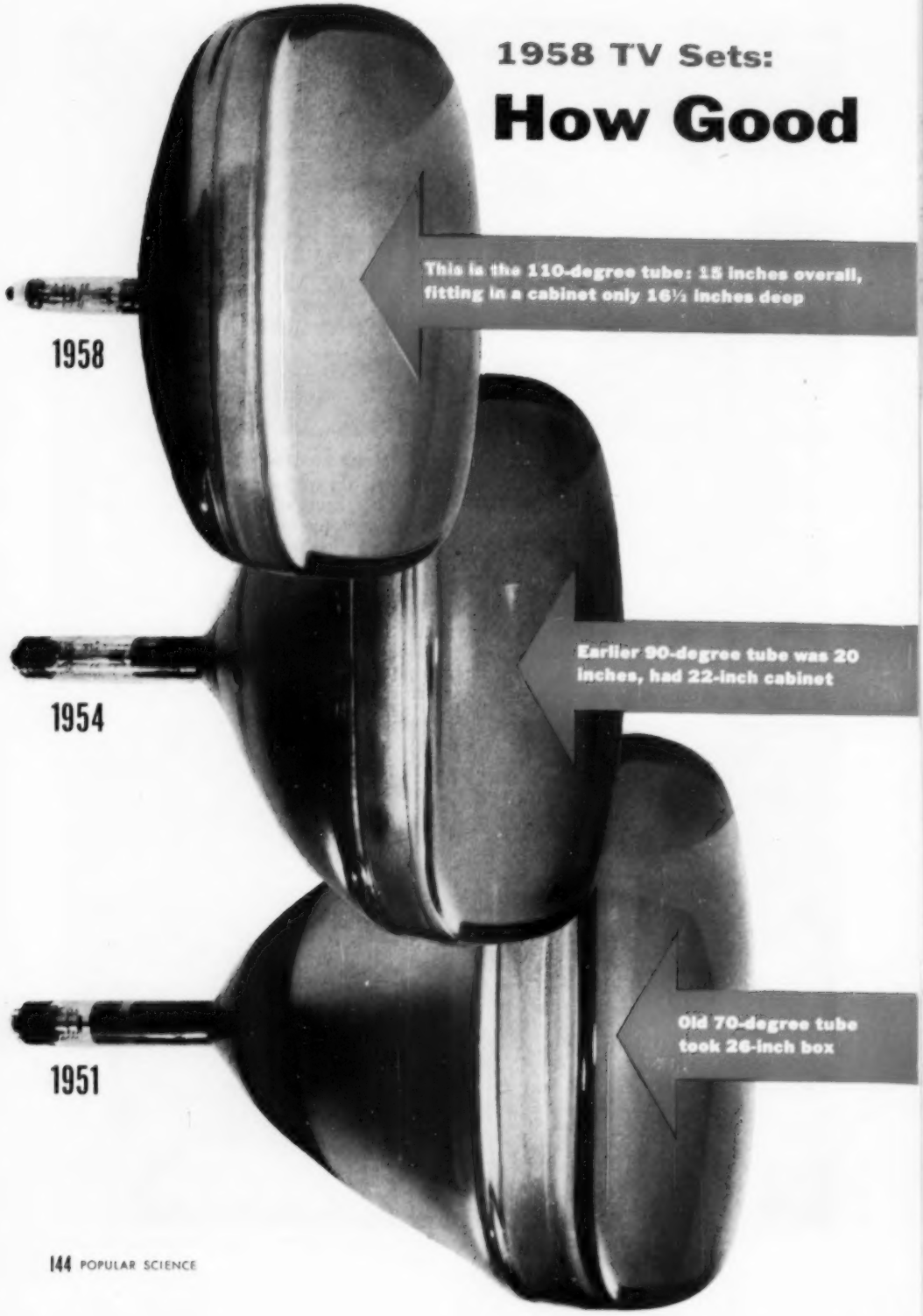
INGENUITY and an automatic electric frying pan hatched these chicks. Padded with fiber-glass to prevent hot spots, the skillet maintained a temperature of 96 to 101 degrees for four weeks of incubation. An employee at GE's Evendale plant in Cincinnati pulled the trick.

Machine tests knowledge of students boning for exam

So FUTURE doctors at Hahnemann Medical College, Philadelphia, could evaluate their study, Dr. John C. Scott and N. B. Burke built this computer. It has 50 questions and a choice of answers on a drum, records as right or wrong the button pushed, and totals the score.



1958 TV Sets:
How Good



Are the New Short Picture Tubes?

This year's redesigned tubes are the start toward a new kind of TV—sharper pictures, screens on the wall, real portables

By Martin Mann and Hubert Luckett

TV SETS this year look different. They're skinny. Many of the standard 21-inch receivers are only 16 inches deep—you can put a table model atop an ordinary chest of drawers and it won't hang over the edge. The 14-inch portables really look portable.

Behind the svelte look is the first major change in years: radically redesigned picture tubes. The skinniest sets use squat 110-degree-deflection tubes, the others have almost-as-short 90-degree tubes. And one tube promises a more detailed image.

That's only the beginning. Other developments now in the works:

- Still more compact picture tubes.
- Flat screens that will hang on a wall.
- Big, *big* pictures to convert your living room into a home theater.
- Transistorized TV sets operating on batteries—real portables.

How good are this year's sets? You're going to hear a lot about the 110-degree picture tube and the slim look it makes possible. The change was admittedly dictated by the cabinet stylists. The engineers claim only equal performance from a more compact package. Did they get it? Here's what's involved.

There are two ways to shorten picture tubes, short of inventing a new kind.

1. You can shorten the neck of the tube by redesigning the gun, the metal electrodes that spray out an electron beam to trace the picture. A new gun saved length on the 90-degree tube, and one was used in the 110-degree tube, too.

2. You can also move the gun closer to the screen. This means that the electron beam has to swivel through a wider angle to reach the picture edges. In the shortest of the new tubes, this deflection angle is 110 degrees. (Deflection angles have steadily widened since TV started—52 degrees, 70, 90 and now 110.)

Redesigning the gun doesn't entail major compromises with performance. But you pay for increased deflection angle:

- Overall sharpness of the picture is involved, and
- Heavier demands are made on certain circuits in the set.

Simple geometry raises the sharpness question. The electron beam has to travel much farther to reach the corners of the picture than it does to reach the center. The corners get blurred and distorted. This is a problem with all tubes, but it gets worse as the deflection angle widens.

One fix is to curve the screen more sharply, and this has been done on some

FLAT PICTURE PANEL FOR TV—no vacuum, no electron beam—is being developed from display devices for radar and computer use. Experimental model above is Sylvania's "Sylvatron."

How to tell a good TV set

THE big change in TV this year is in the picture tubes. Circuits are little different. The chart at right gives manufacturers' specifications on portables and 21-inch table models. It is arranged by chassis, since the same chassis may be used in many models. Here's what to check:

Picture tubes. Deflection angles and ion traps are what designers argued about this year, as explained in the accompanying article. There is also considerable variation in the high voltage, which affects the brightness of the picture—the higher the voltage the better.

Sharpness. The circuits in the intermediate-frequency (IF) and video amplifiers are the principal limitation on picture quality. The more stages and tuned circuits there are, the better. The bandwidth that the IF can handle matters, too; in top-grade receivers it is close to the theoretical maximum, 4.0 mc.

Sensitivity. A new type of tuner—the part that gets the TV signal from the air—appears this year. It is the tetrode, a more sensitive version of the pentode, comparable to the neutrode introduced last year. Still more sensitive is the cascode. All sets have some kind of automatic gain control (AGC) to adjust amplification to the strength of the signal. AGC circuits vary widely, ranging from very simple derived types to complex keyed controls.

Filters. The more filters, and the more kinds of filters, the less your picture is likely to be messed up by signals from police, ham or aircraft radios.

Power supply. The transformerless type is cheaper, but has two minor disadvantages: (1) if one tube blows, all go dark; (2) the chassis may be electrically charged, introducing some shock hazard.

Tube functions. This tells you the number of tube jobs performed inside the set; the more the better.

MANUFACTURER	CHASSIS	SCREEN SIZE	APPROX. PRICE	
ADMIRAL	16H1 16F1 16G1 17G1	14" port. 17" port. 21" 21"	$140 $170 $180 $320	
ANDREA	VP21 VQ21	21" 21"	$240 $330	
DUMONT	RA-392 RA-402 RA-400	14" port. 21" 21"	$159 n.a. $269	
EMERSON	1254 1264 1284 1400	14" port. 17" port. 21" port. 21"	$128 $168 $198 $208	
GENERAL ELECTRIC	Q2 M3 U2	14" port. 17" port. 21"	n.a. n.a. n.a.	
HOFFMAN	327 332/333 422	14" port. 21" 21"	$170 $190 $370	
HOTPOINT	Q2 M3 U2	14" port. 17" & 21" port. 21"	$140 $170 n.a.	
MAGNAVOX	24 series 25 series	21" 21"	$200 $250	
MONTGOMERY WARD	4031 5041 5044	17" port. 21" 21"	$140 $190 $280	
MOTOROLA	14P10 17P1 21T39 21K72	14" port. 17" port. 21" 21"	$150 $190 $200 $230	
OLYMPIC	14TT92 17TU93 TA100 TD102	14" port. 17" port. 21" 21"	$150 $170 $200 $250	
PACKARD-BELL	V8-2 88S3 98D3	17" port. 21" 21"	$170 $220 $290	
PHILCO	8H25 8L41 8L71	17" port. 21" 21"	n.a. n.a. n.a.	
RCA	111C 109C 113A 116A	14" port. 17" port. 21" 21"	$150 $190 $200 $220	
SEARS, ROEBUCK	8102 7146	17" port. 21"	$143 $115	
SETCHELL-CARLSON	P-63 58	17" port. 21"	$179 $299	
SYLVANIA	537-3 540-3 540-1	17" port. 21" 21"	$180 $200 $230	
TRAV-LER	1722 721-MT-600	17" port. 21"	$140 $170	
WESTINGHOUSE	V-2311-45 V-2373-1 V-2371-24 V-2372-27	14" port. 17" port. 21" 21"	$130 $170 $200 $240	
ZENITH	15A25 15Z30 17A20 19A20	14" port. 17" port. 21" 21"	$140 $160 $190 $240	

Specifications apply to cheapest model using chassis indicated.
n.a. Information not available.
a Either ion-trap or non-ion-trap tubes may be used.
b Either neutrode or tetrode tuners may be used.

CABINET SIZE (ht. x w. x d.)	WEIGHT (lb.)	DEFLECTION ANGLE	HIGH VOLTAGE (volts)	ION TRAP	NUMBER I.F. STAGES	I.F. BAND WIDTH (megacycles)	TUNED CIRCUITS IN I.F.	NUMBER VIDEO AMP. STAGES	TUNER	AUTOMATIC GAIN CONTROL	INTERFERENCE FILTERS	TRANSFORMER POWER SUPPLY	NUMBER OF TUBE FUNCTIONS
12" x 15" x 13"	30	110°	13,500	no	3	3.75	8	1	cascode	keyed	I.F. trap	no	18
14" x 16" x 15"	37	110°	15,500	no	3	3.75	8	1	cascode	keyed	I.F. trap	no	18
19" x 24" x 15"	60	110°	18,500	no	3	3.75	8	1	cascode	keyed	I.F. trap	no	18
38" x 29" x 17"	115	110°	18,500	no	3	3.75	8	1	cascode	keyed	I.F. trap	yes	18
20" x 23" x 19"	79	90°	14,500	yes	3	3.25	6	1	cascode	keyed	high-pass	yes	22
37" x 24" x 19"	98	90°	18,000	yes	3	3.25	6	1	neutrode	keyed	high-pass I.F. trap	yes	26
13" x 14" x 16"	30	90°	14,000	yes	3	3.00	10	1	cascode	derived	high-pass	no	19
19" x 23" x 17"	n.a.	110°	15,000	no	3	3.00	10	1	cascode	derived	high-pass	yes	20
34" x 26" x 18"	n.a.	90°	16,000	no	3	3.25	10	1	cascode	derived	high-pass	yes	23
11" x 14" x 15"	24	90°	12,000	yes	2	2.90	4	1	pentode	derived	I.F. trap	no	18
13" x 16" x 17"	32	90°	12,000	yes	2	2.90	4	1	pentode	derived	I.F. trap	no	18
18" x 23" x 14"	n.a.	110°	15,500	no	2	2.90	4	1	pentode	derived	I.F. trap	no	18
18" x 23" x 17"	n.a.	90°	16,500	no	3	3.60	5	1	neutrode	derived	2 I.F. traps	yes	21
12" x 14" x 14"	24	110°	11,000	yes	2	2.90	3	1	tetrode	derived	none	no	17
14" x 16" x 15"	30	110°	13,600	yes	3	3.25	4	1	tetrode	derived	none	no	17
19" x 27" x 15"	n.a.	110°	16,500	yes	3	3.50	7	1	cascode	derived	none	yes	21
14" x 17" x 14"	36	110°	16,000	no	2	2.10	4	1	neutrode	derived	2 I.F. traps	no	17
18" x 26" x 19"	82	90°	15,400	no	3	3.30	6	1	neutrode	derived	2 I.F. traps	yes	20
34" x 29" x 20"	115	90°	16,500	no	3	3.30	6	1	neutrode	keyed	2 I.F. traps	yes	24
12" x 14" x 14"	24	110°	11,000	a	2	2.90	3	1	tetrode	derived	none	no	17
14" x 17" x 14"	30	110°	13,600	a	3	3.25	4	1	tetrode	derived	none	no	17
19" x 27" x 15"	79	110°	16,500	a	3	3.50	7	1	cascode	derived	none	yes	21
31" x 22" x 20"	n.a.	90°	16,000	no	3	3.60	7	1	neutrode	derived	2 I.F. traps	yes	26
32" x 23" x 20"	n.a.	90°	16,000	no	3	3.60	7	1	cascode	keyed	4 I.F. traps	yes	29
14" x 16" x 17"	34	90°	14,000	yes	3	3.40	8	2	neutrode	derived	FM trap	no	17
34" x 26" x 17"	78	90°	16,000	no	2	3.00	6	1	neutrode	derived	I.F. trap	no	16
36" x 26" x 17"	92	110°	16,000	no	3	3.40	9	1	neutrode	keyed		no	20
13" x 14" x 14"	27	90°	13,000	no	3	3.50	7	1	cascode	keyed	high-pass FM trap	no	17
14" x 17" x 15"	38	110°	15,000	no	3	3.50	7	1	cascode	keyed		no	18
19" x 25" x 17"	74	90°	18,500	no	3	3.50	8	1	cascode	keyed		no	18
35" x 25" x 16"	90	90°	18,500	no	3	3.50	8	1	cascode	keyed		yes	18
12" x 14" x 12"	29	90°	15,000	no	2	2.85	4	1	tetrode	derived	FM trap	no	19
13" x 16" x 14"	38	90°	15,000	no	2	2.85	4	1	tetrode	derived	FM trap	no	19
18" x 26" x 18"	82	90°	17,000	no	2	2.85	5	1	tetrode	derived	FM trap	yes	19
18" x 26" x 18"	85	90°	19,000	no	3	n.a.	8	1	cascode	derived	FM trap	yes	22
15" x 18" x 13"	45	110°	14,000	no	3	3.25	4	1	cascode	derived	none	yes	19
19" x 27" x 20"	100	90°	18,000	yes	3	3.25	4	1	neutrode	derived	none	yes	20
19" x 30" x 16"	110	110°	18,000	no	4	3.75	5	2	neutrode	keyed	n.a.	yes	26
15" x 17" x 15"	33	110°	15,500	no	3	3.25	7	1	tetrode	derived	n.a.	no	18
19" x 25" x 18"	75	90°	17,500	yes	3	3.25	7	1	cascode	derived	n.a.	yes	21
19" x 27" x 19"	71	90°	20,000	yes	3	3.25	7	2	cascode	derived	n.a.	yes	24
14" x 14" x 15"	26	90°	13,000	no	3	3.25	6	1	cascode	derived	high-pass 2 I.F. traps FM trap	no	28
16" x 17" x 16"	34	110°	15,000	no	3	3.25	6	1	cascode	derived		no	28
19" x 24" x 16"	79	110°	15,000	no	3	3.25	7	1	cascode	derived		yes	27
19" x 22" x 17"	70	110°	17,000	no	3	3.25	7	2	cascode	keyed		yes	29
15" x 18" x 17"	31	90°	13,000	no	2	3.00	5	1	tetrode	derived	none	no	n.a.
22" x 23" x 22"	65	90°	13,000	no	2	3.00	5	1	pentode	derived	none	no	n.a.
13" x 17" x 11"	37	90°	13,000	no	3	4.00	9	1	cascode	keyed	high-pass	yes	23
23" x 23" x 17"	78	90°	16,000	no	3	4.00	10	1	cascode	keyed	high-pass	yes	24
13" x 16" x 14"	34	110°	16,500	yes	3	3.30	7	1	cascode	keyed	n.a.	no	21
17" x 21" x 14"	49	110°	16,500	no	3	3.30	7	1	tetrode	keyed	n.a.	no	20
20" x 24" x 17"	68	110°	16,500	no	3	3.30	7	1	cascode	keyed	n.a.	no	21
13" x 16" x 16"	40	90°	13,500	yes	2	3.50	5	1	b	derived	FM trap	no	18
18" x 22" x 20"	75	90°	13,500	no	2	3.50	5	1	b	derived	FM trap	no	18
12" x 14" x 16"	27	90°	11,000	yes	3	3.35	8	2	pentode	derived	2 I.F. traps	no	17
14" x 16" x 13"	29	110°	14,500	no	3	3.35	8	1	neutrode	derived	2 I.F. traps	no	17
21" x 24" x 19"	75	90°	14,300	yes	3	3.35	8	2	tetrode	derived	none	no	18
21" x 24" x 16"	72	110°	15,500	no	3	3.35	9	1	neutrode	keyed	2 I.F. traps	no	19
14" x 17" x 14"	32	90°	14,000	yes	3	3.50	8	1	cascode	derived	I.F. trap	no	19
14" x 20" x 17"	48	90°	14,500	yes	3	3.50	8	1	cascode	derived	I.F. trap	no	19
20" x 23" x 17"	n.a.	90°	18,000	no	3	3.75	10	1	neutrode	keyed	I.F. trap	yes	19
20" x 23" x 17"	n.a.	90°	20,000	no	3	3.75	10	1	cascode	keyed	I.F. trap	yes	22

110-degree tubes. But sharper curvature introduces its own distortions—you expect to look at a flat image, not one shaped like part of a big ball.

Backers of the 110-degree tube say that any falling off of the picture in the corners is so slight as to be unnoticeable. The quibblers say that the picture degradation may be slight, but it's there.

The other penalty for wide deflection involves the yoke—an electromagnet—which has to work harder to swing the electron beam back and forth through the wider angle. To some extent, the engineers got around this by designing a more efficient yoke, and by slimming the picture-tube neck (another production headache), which puts the yoke closer to the electron beam. Even so, the 110-degree tube calls for 30 percent more power from the set's horizontal-deflection circuit than the 90-degree tube does. And this circuit has been beefed up. (It has always been one of the hardest worked parts of a television receiver; its horizontal-output tube is more likely to die on you than any other tube in the set.)

Catch those ions. This year's reworking of picture tubes reopened an argument of some standing among tube designers: Do you *need* an ion trap?

The ions they worry about are electrified molecules of air inside the tube (the vacuum can't be perfect, after all). What happens is that the powerful electron beam smacks the air molecules, either ripping an electron loose (positive ion) or forcing an extra electron into the molecule (negative ion). The negative ions shoot along with the electron beam and hit the phosphor screen. And since the ions are about 60,000 times heavier than the electrons in the beam, they make the screen burn out faster than it otherwise might. The positive ions travel in the other direction and smash into the filament of the tube, which doesn't do that essential bit of wire any good, either.

Ion traps catch these ionized air molecules before they can cause any harm. Commonly, a magnet curves the streams of electrons and ions both. But the ions, being so much heavier, curve less sharply and are caught by an electrode outside the electrons' path. The trouble is that the ion-trap magnet often gets misadjusted and you're back where you started.

This year many big makers (notably RCA, Sylvania) have dropped the ion trap. They figure that:

- It eliminates a troublesome adjustment.
- Improved vacuum techniques leave few air molecules to form ions anyway.
- The aluminum backing on the screen (now standard in every set listed in the PS spec chart) stops the few negative ions that are created.

General Electric is a major dissenter. Its engineers claim that the ion trap does prolong tube life because:

- The vacuum can't be perfect.
- The aluminum backing helps stop negative ions but does nothing about the positive ions that go the other way to batter the filament.

So this year you can take your choice.

More detail. One of 1958's crop of new picture tubes boasts an improvement all tube engineers have been expecting. This is a refinement of the electrical lenses in the gun to give higher transconductance, which means that the tube can reproduce a full range of tones—white to black—from a weaker television signal. Such a tube requires less amplification of the signal by the video amplifier circuit. This advantage can be exploited in either of two ways:

1. The video amplifier can be simplified, saving money.
2. The video amplifier can be reworked, with no cost saving, to amplify a greater range of frequencies in the television signal and add detail to the picture.

Zenith is first to come out with a high-transconductance tube, its Sunshine Tube. It chose alternative No. 2 and increased the pass-band of the video amplifier. Trade reports say that it shows in the picture.

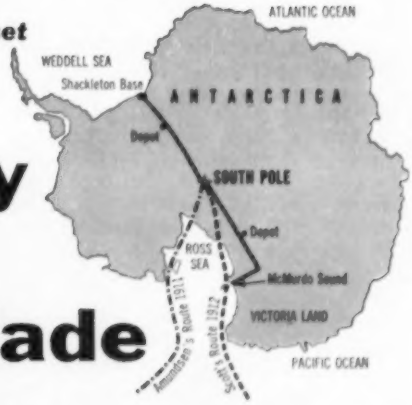
Look for other makers to follow suit shortly. They are likely to exploit high transconductance both ways: to cut costs on some sets, improve detail on others.

What's coming? The men who get paid for staring out the window and dreaming are thinking of flat TV tubes—a couple of inches front-to-rear. A really big one could hang on your living-room wall. A 21-inch size might fold into something like today's portable phonograph, which could be truly portable—no power cord. The dream will evolve in stages:

1. A tube with a deflection angle of

[*Continued on page 250*]

British South Pole expedition gets set to travel 2,000 miles across the bottom of the world on:



The Journey No Man Has Ever Made

By Gardner Soule

THE "long-johns-forever" boys—11 men who may not strip off their underwear till next March—are about to start off on a journey explorers have been dreaming about since the early 1900's: A 2,000-mile trek across the Antarctic, via the South Pole.

Says Sir John Hunt, leader of the British team that climbed Mount Everest: "This is the last great adventure on earth left to man."

In this International Geophysical Year, a dozen nations have established stations for scientific research in Antarctica. But these 11 men are attempting something no one has ever before achieved—a land

Conquerors of Antarctica hail from different nations

A Norwegian, Amundsen, got to the South Pole first, making the only overland round trip so far. Britain's Scott came in second, but perished on the way back. Operation Deep Freeze, under U. S. Navy's Dufek, has a stopping-off place at the Pole for the British team of hardy men now crossing Antarctica.

journey across this vast expanse of ice, rock and snow covering an area of some six million square miles.

Why, in this day when planes can carry you across the south polar region in a few hours, do men instead take four months to attempt what is called the worst journey in the world?

The men, members of the British Commonwealth Trans-Antarctic Expedition, are—like Hunt's Everesters—out for adventure. But they also want to know things you can only find out on the ground—or on the ice:

Is there uranium? The worst feature of the worst journey in the world—the wind—may help answer the question. The wind freezes your breath into an ice mask on your lower face. You hate the mask till you realize it keeps off the wind. The same wind keeps rock outcroppings all across the Antarctic free of snow. It even, in fact, wears down the rock. The rocks are, therefore, open for inspection—

"LET'S MEET HERE." Hillary of Mt. Everest fame (left) will help Dr. Fuchs (right) and his team across the difficult Victoria mountains as they cross the vast, gale-swept Antarctic on foot.

and uranium will be diligently sought all the way across the bottom of the globe.

Gold, silver, platinum? Any place as big as the Antarctic (the size of Europe plus Australia) must have, explorers believe, all these—plus other useful minerals. The rocks will be studied, as in the case of uranium, for evidence.

What's the terrain really like? Of the 2,000 miles the expedition will cover, 1,900 never have been trod by man. All the route will be mapped.

How much ice is there? The men will estimate it. They will fire explosive charges into the ice every 20 minutes or so, and determine its thickness by measuring the time that elapses between an explosion and its echo. This will tell whether the Antarctic is a continent, as has been thought, or something else—perhaps a series of islands covered and joined by ice. An informed guess, as of now: That it is not one continent, but is split at least in two by a cleavage along the expedition's route.

The Antarctic, continent or not, has never been crossed on its surface. Up till now, in fact, only one man—Roald Amundsen of Norway—has led an overland expedition that got to the South Pole and returned successfully. Amundsen, in December, 1911, discovered the Pole. Britain's Robert Falcon Scott, who was racing him, got to the Pole in January, 1912, but perished with four companions a few miles from help on the way out. Britain's Ernest Shackleton, still earlier, made long overland journeys, but failed to reach the Pole. A number of long sledging trips, in recent years, have not attempted the Pole at all.

For Dr. Vivian E. Fuchs, leader of the 1957-8 attempt, the worst journey in the world should be much better than it was

for Shackleton, Amundsen and Scott. Mechanized equipment and additional support from others are the reasons why:

Fuchs and his group will set out from their base at Shackleton camp, on the Atlantic, about November 1. They will take Husky dogs, sledges, scientific equipment—and four-ton Sno-Cat tractors in whose enclosed cabs, they hope, they will ride a good part of the way. If the Sno-Cats can negotiate ice ridges, crevasses and mountainsides, they may cover as much as 40 miles a day, as against 15 (or fewer) with dogs and sleds. To help the Sno-Cats over crevasses, they are taking a sectional aluminum bridge.

In attempting to use mechanized equipment, Fuchs is, believe it or not, following both Shackleton and Scott. Shackleton, in 1908, also wanted to ride—not walk. He took along an Arrol-Johnston touring car (for use in temperatures to minus 100). Sir Raymond Priestley, who was with him, remembers that the car did cover 10 miles before its wheels bogged in the snow.

Scott, as long as 46 years ago, actually had tractor-tread vehicles, but had to abandon them at the outset of his journey to the Pole because no one then knew how to keep automotive engines operating in Antarctic cold. Fuchs and his men have devices to preheat their engines and batteries.

About Christmas or New Year's, the 1957-8 trans-Antarctic travelers expect to reach the U. S. base at the South Pole. (The Americans established this base by air—not by land. It's a part of Operation Deep Freeze, under the command of Rear Admiral George J. Dufek, USN.) Here they will obtain a welcome, warmth, companionship and a fresh supply of food. The American small town (insulated huts) at the Pole today is a far cry from what Amundsen found there: a lonesome, barren ice desert. Or what Scott, with a sinking heart, found: a flag, a tent and notes from Amundsen saying the Norwegians had got there first.

The British explorers, who will spend the nights in sleeping bags and tents on the long trek, will have—if they want to use it—a chance to take off their woollies and bathe in hot-water showers at the U. S. base. They may not, because one school thinks that you should remain acclimatized by sleeping in tents right straight through. In preparing for their junket, some members of the British party actually spent every night of an Antarctic winter in tents. They stayed bundled up to do it, and this caused Kenneth Blaiklock, a surveyor at Shackleton base, to name the expedition the "long-johns-forever" boys.

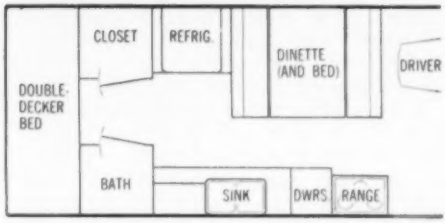
About the fourth week in January, 1958—or four weeks after leaving the American camp at the South Pole—Fuchs and his men expect to meet a party advancing toward them from the Pacific. This team will be led by Sir Edmund Hillary, one of the two men who first ascended Mount Everest (under John Hunt). The Victoria mountains, in Hillary's territory, are a big reason he got the assignment. Hillary has been down there this year, trying to find a way to lead out Fuchs and his men via the Ferrar glacier, one of the gigantic rivers of ice that are often the only passageways through the ranges. He aims to bring the party to the Pacific at Scott base, McMurdo Sound. The U. S. Navy has an air base two miles from Scott base.

Fuchs hopes his Sno-Cats will last at least till the Ferrar glacier. Like Fuchs,

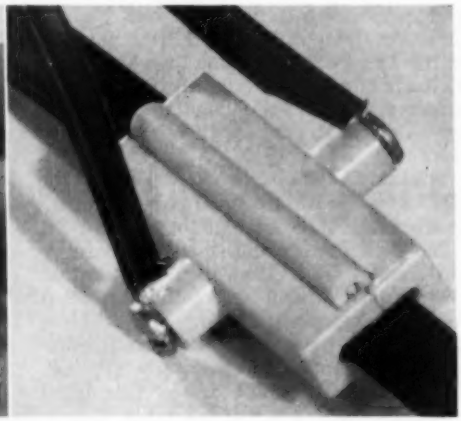
[*Continued on page 254*]

New Aids to Living

1 Living space for four is tucked into this land cruiser which you handle like a family car. Measuring 19½ feet from bumper to bumper, it has a wheelbase of 122 inches. It has a butane stove, refrigerator, water heater and lights. There is also a 115-volt electrical system for lighting if a hookup is nearby. It comes in six-cylinder and V-8 models with manual or automatic transmission.



2 TV isolator take-off permits one antenna to do double duty in a two-set home. You just slide the halves of the unit together over the twin lead running from the antenna to the first set (left) and connect the take-off to the second set with twin lead (right). For each additional TV set, another unit is added.

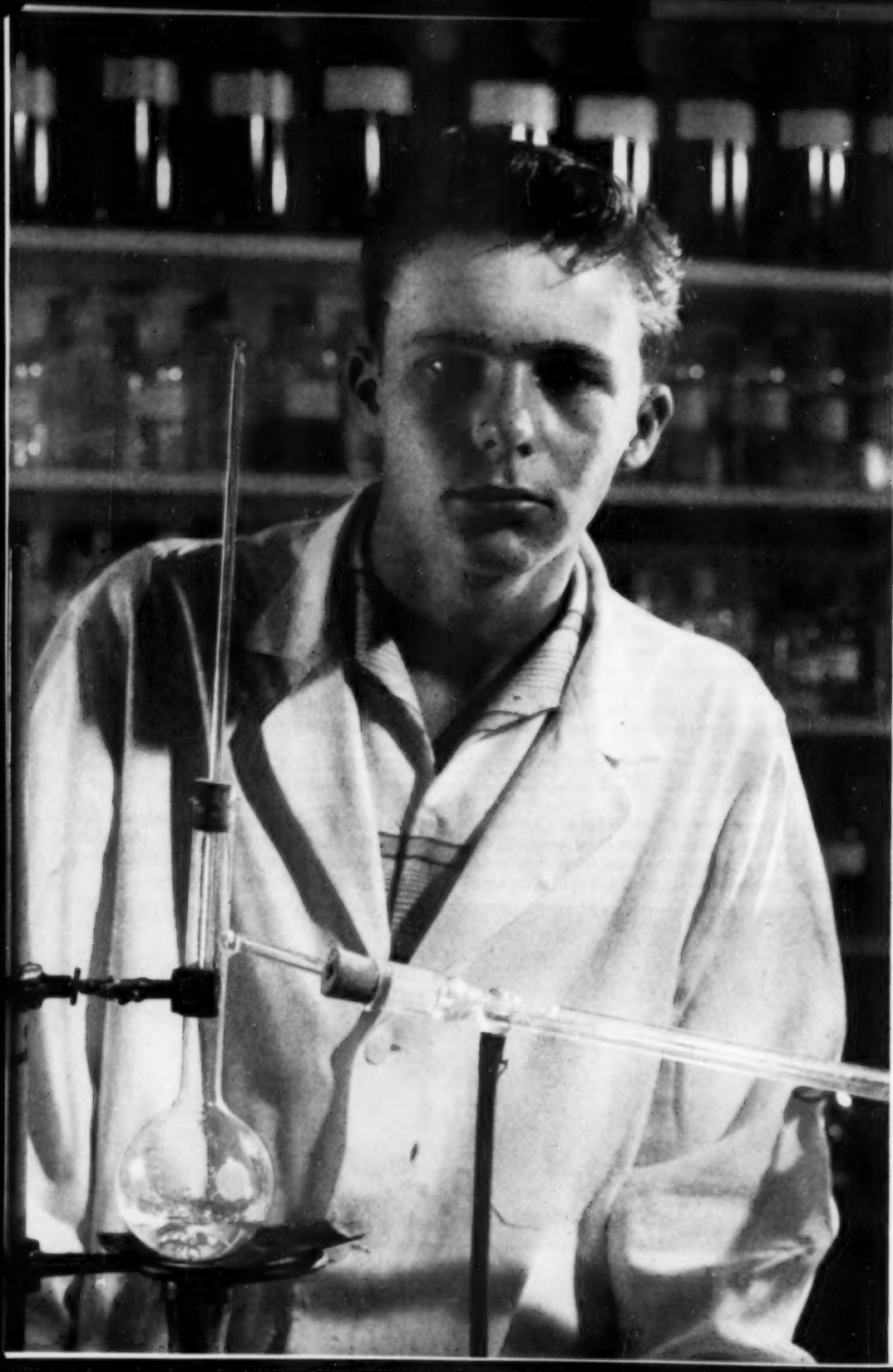


3 **Porthole for pets** spares you the nuisance of opening the door every time the family pet wants in or out. Triangular shutters of flexible plastic open as your cat or dog shoulders its way through, then close again after its passage to protect the house from drafts.

4 **Spray-on shoe polish** dries instantly and gives you a lasting shine that needs no buffing. It can be used on shoes of any color. The coating is water repellent. The maker says the no-rub polish is not a lacquer but a dressing that lets the shoe leather "breathe."

More information *about the products shown on these pages can be obtained from: 1. Case Liv-N-Roam Cruiser Division, Custom Bilt Body, Inc., Camp Rd., Hamburg, N. Y.; 2. Charles Engineering Co., Inc., 6053½ Melrose Ave., Los Angeles 38; 3. Turen, Inc., Beaver Park, Danvers, Mass.; 4. Dapper Cleaners, 329 Fourth Ave., NYC 10; 5. Kalwall Corp., Manchester, N. H.*

5 **Translucent structural panel** is rugged enough for load bearing, and light enough so that one man can handle it. The material, reinforced plastic bonded to an aluminum grid, is designed for use as interior or exterior walls, and nonglare roofs (see p. 140). Panels come in six colors and several sizes.



How Good Are the Science Labs in Your Youngster's School ?

Good laboratories teach a priceless skill: How to figure things out. Here's a yardstick to measure your school

By John Kord Lagemann

IMAGINE trying to teach your child how to swim without getting him wet. That's no sillier than trying to teach him science without giving him a chance to experiment in a laboratory.

Why? Because science is not solely a great bundle of organized facts, like some other studies. It is, in addition, an exercise in the use of a sharp-edged detective tool—the scientific method.

The scientific method is one of the all-time great achievements of the human intellect. It is a way of thinking, a wondering, skeptical, I'm-from-Missouri attitude. And it is a way of finding things out, the don't-go-by-the-book, let's-try-it-and-see operation.

Without it, you'd be back behind a horse-drawn plow. With it the whole wonderful world of modern civilization has been built. The scientific method is not just for scientists. Your youngsters can use it constantly to find answers to problems of everyday life—buying a car, choosing a job, even voting.

The guidance director of a Midwest high school told me, "You can spot the science students when youngsters come in for counseling. They have learned from experience how to organize their thoughts, define their goals and weigh the facts before making up their minds."

If you want your children to grow up with qualities like those, they need laboratory training.

Are they getting it? Unfortunately, laboratory instruction is perfunctory in many American high schools, nonexistent in some. It is totally lacking in most elementary schools.

According to a survey by the U. S. Office of Education, one out of four high schools tries to teach chemistry without a laboratory. The same is true of physics. Only three out of five schools provide lab work with their biology courses. In junior high, only about 40 percent of the ninth-grade general-science courses include lab work, and the figure drops further for the seventh and eighth grades.

Other studies indicate that, today, more attention is being given to laboratories. But the lack is still serious, particularly in the small schools which educate substantial numbers of American children. It is an educational deficit second only to the shortage of science teachers.

The teachers themselves are alarmed. Robert H. Carleton of the National Science Teachers Association pulled no punches when he said recently, "It's time we stopped cheating our children. The child who receives no lab instruction in science is being betrayed as surely as if the school had taught him half-truths."

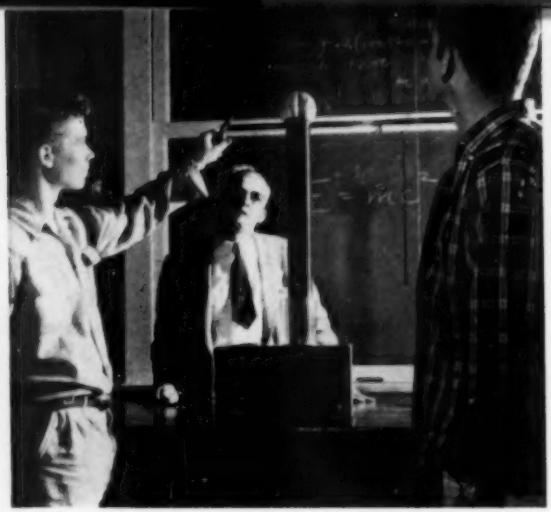
How about your youngsters? You don't have to be a scientist to find out nor a politician to do something about laboratory training for your children. The labs in your schools can be judged by simple, non-technical standards. If you find improvements are needed, your local PTA and other civic groups can work with school authorities to provide them.

There are three questions to ask:

PHOTO BY W. W. MORRIS

Atomic-age physics lab: Could this be your school?

ATOM-SMASHERS AND CLOUD CHAMBERS in school labs? Absolutely. Today's youngsters must learn today's science. They start with the atomic picture of the universe. In many schools, students build simple nuclear instruments. Others make use of moderately priced working models that are now becoming available. At right, Berkeley (Calif.) High senior Ed Miller pulls sparks off a high-voltage generator while Dave Newsom and teacher M. Van Waynen observe. The two 17-year-olds are watching for the thin streaks of cosmic rays in a cloud chamber in the center photo. At far right, Pete Piatkowski, eight, assembles a small Van de Graaff machine from a kit. These instruments are made by Atomic Laboratories of Berkeley.



• Is laboratory work a regular part of every science course?

• Are facilities adequate?

• Are teachers using the facilities to give the training your youngsters need?

Don't accept such brush-off answers as "We can get by without labs," or "We can't afford them." Your youngsters *can't* be properly educated without lab experience. And the expense need not be as great as some educators appear to believe.

A place to experiment. Oddly enough, while the cost of lab facilities frightens many school administrators, others are snowing the children under with nonessential equipment. Not only does this waste public funds—your money—but it actually interferes with proper training.

There are some basic things your children must have: workbenches with sinks, and utilities—gas, electricity, water.

These do cost more than the desks that outfit a history classroom. But the expense is not out of line with what most schools spend on athletics and band instruments.

Beyond this basic investment, elementary and high-school labs don't need very much at all. That is the startling conclusion of the Physical Science Study Committee, a group of 65 of the nation's top scientists and educators who are now working out a radically new approach to physics instruction.

Dr. Elbert Little, executive director of the committee, told me, "There is no essential piece of equipment which a science teacher and his students can't build out of cheap materials readily available in any community. Apart from the initial outlay for the plant, the cost of laboratory equipment and supplies need run no higher than $10 per student."

Dr. Little's committee is concerned about economy, of course. But that's not the main reason for its interest in build-it-yourself equipment. Youngsters learn more when they design and build the apparatus they need for experiment.

The committee's experts have shown how many useful laboratory instruments can be contrived from such odds and ends as rubber bands, pins, razor blades, soda straws and marbles. For instance: A stroboscope to "stop" rapidly rotating machinery was made from tongue depressors, a tin can, a snap fastener and wire; a balance that will weigh 1/300,000 of an ounce (the mark left by a pencil is that heavy) was made from straws, wood and pins; and a rangefinder more accurate than a $40 camera accessory was made from wood, mirrors and string.

Since fancy ready-made equipment isn't always necessary or even desirable, you can tell more about the quality of your schools' lab program by asking *how* it makes sure your children have the things they actually need:

• Do students build much of their own apparatus? The Physical Science Study Committee's lab manual is not yet published, but other books and magazines describing homemade equipment are available. (For example: the UNESCO *Source Book for Science Teaching*, com-

piled by Dr. Ellsworth S. Obourn of the U. S. Office of Education and available for $3 from UNESCO Publications Center, 801 Third Ave., New York 22, N. Y.)

• Does your school share expensive equipment with others nearby? Often, several schools pool their funds, then take turns using the apparatus.

• Are touring demonstrators—such as the Atomic Energy Commission's "Traveling Science Teachers"—invited to visit?

• Is the outdoors put to work as a natural, living laboratory? Students can cultivate garden plots on the school grounds, study wildlife in parks and nearby woodlands. They'll learn far more from wheat in the field or a wren in a tree than from dusty specimens in a cabinet.

What kind of lab work? The answer to this question, regardless of facilities, is what determines the value your youngster gets out of his science studies. There are two kinds of experiments:

The "cookbook" method tells your youngster exactly how to go about finding out something he knows already. One that I remember from my high school days: Prove that water boils at 212° F. by putting a thermometer into some steam.

The problem method forces your youngster to figure out the answer in his own way. For example, he may be handed a vial of liquid and told to identify the chemicals it contains. Neither his teacher nor the lab manual gives him step-by-step instructions for the analysis. He's on his own, learning the scientific method.

I saw what the problem kind of lab teaching can do one warm June day when I visited the third-grade classroom of a Long Island (N. Y.) school (*third* grade is correct; they can't start too young).

A nine-year-old boy wondered out loud, "How come dresser drawers stick in the summer, but not in the winter?"

From across the room, a pigtailed blonde theorized, "Things expand when they get hot. It's hotter in summer."

The teacher didn't say, "No, that's wrong." She didn't say, "Let's look it up." She said, "Let's find out."

The boys bored holes in two small pieces of wood, then slide-fitted the holes with doweling.

The girls took the samples to the lunchroom kitchen and put one piece in the refrigerator, the other in the oven.

[*Continued on page 258*]

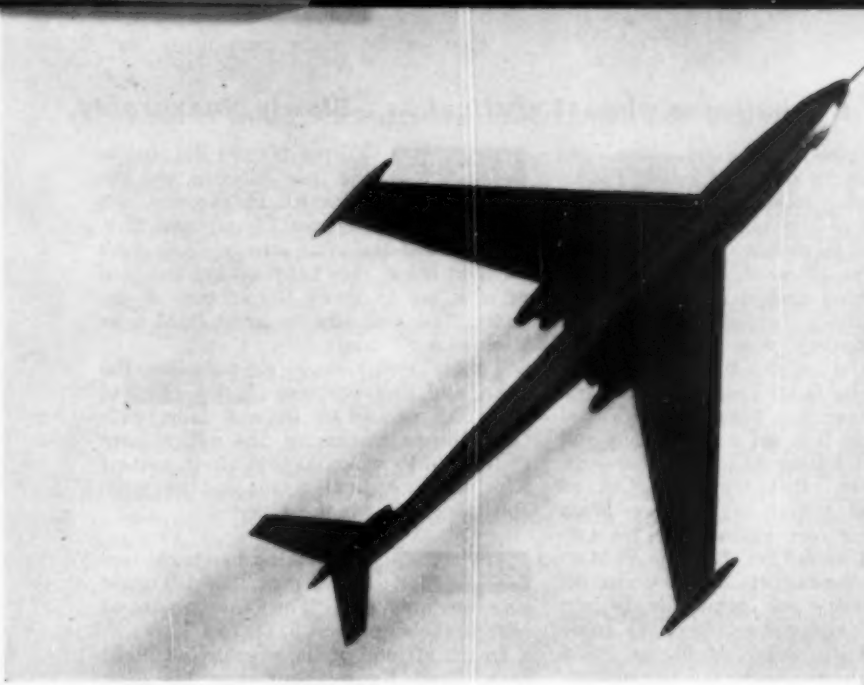
Next Month: How Good Are School Shops?

The good jobs today are waiting for the skilled workers. Your youngster should be able to begin preparation for these promising careers in high school. Can he? Does the school system in your town provide the training? Is it the right kind of training? You'll see how to find out in the December PS report-in-depth on school shops.

Three hundred yards aft the P6M in a Navy FJ-2, chase pilot Brown said, "All clear, Bob." The dive would be the payoff for the fix on the P6M's tail.

The Fortunate Disaster of the P6M

By Eliot Tozer



AT 2:15 P.M. on November 9, just one year ago, Bob Turner, test pilot on the hottest flying boat in the world, flashed an "all clear" to the crew on the launching gear and P6M No. 2 eased off her cradle into the choppy waters of Chesapeake Bay. Turner racked her throttles forward. The four Allison J-71s roared a crescendo of power, their jet exhausts dimpling the water, and the long, sleek P6M sliced gracefully through the chop toward takeoff position.

Gently, Turner felt out the SeaMaster's controls. He eased back on the yoke and the "flying tail" perched atop the fin responded smoothly. Perhaps, he thought, the new fix on the tail would knock out the shudder that had been shaking up the big boat at near-sonic speeds.

Turner ticked off the items on his check list, making every move with deliberate caution. For this flight, as on all flights, the SeaMaster's deck was crammed with special recording instruments. Their readings would be telemetered by radio directly to the monitor room at the Martin Airport in Baltimore.

In the monitor room, the instrumentation engineers checked their Sanborn recorders. One man flicked on the Brown recorder; it would take 144 individual readings. Before the flight ended, they would tape four miles of recordings. Over in the communications section, 17 channels were tied into the monitor

Now the hull was almost vertical . . . Slowly, inexorably,

room, the tower, the chase plane, and the four men in the missile-like P6M.

The monitor room was crowded, but quiet. Most of the men were engineers who wanted to watch the oscillographs and "see" the plane shudder when Bob Turner grooved toward the earth in his near-sonic dive.

George Rodney was there. He had been test pilot of the first of this new breed of flying boat. Later, he had been in the monitor room when it had flipped unexplainably into an outside loop and disintegrated, killing all four men aboard.

There were other watchers. Out at the seaplane ramp, high Navy brass stamped their feet against the November cold and waited for the huge P6M to cut in her after-burners and thunder off the bay. Anxiety was etched deeply into their faces because the time had come for a showdown. After 24 flights, P6M No. 2 was almost ready for her acceptance tests—yet no previous fix had been able to stop the shake.

It was time for a showdown in a more vital way. One important chance for survival of the Navy's air arm rode on this P6M. Some strategists said that naval aviation had become obsolete in the jet age. The Strategic Air Command, they said, could attack the Eurasian land mass without the help of Navy planes. Land-based Air Defense Command interceptors could defend the shores of the U. S.

But Navy airmen disagreed. They pointed to Field Marshal Montgomery's recent statement that the world's navies may be the only striking forces left after the opening salvos of an atomic war. If so, squadrons of P6Ms, hidden in remote bays, could carry on the atomic fight.

The SeaMaster could also fight a nasty war of harassment, dropping mines by parachute into enemy shipping lanes and knocking off enemy subs, then dashing back to its hidden coves at 600 m.p.h.

Bob Turner knew all this. It showed in the tight lines along his jaw as he called out the last of the 50 items on his takeoff check list. He pressed his intercom button to call Bill Compton, flight engineer, and Tom Kenny, flight test engineer. Both gave him an "all clear." A quick glance showed co-pilot Bill Cunningham was ready.

2:44 PM Turner poured the coal to the four Allisons and the P6M strained forward. In seconds, she was thundering across Chesapeake Bay. Turner held the yoke steady. You don't have to horse this baby up on the step or rock her to break the suction of the water. The radically designed P6M is as sleek as a PT boat.

Turner eased back gingerly on the yoke and the porpoise-shaped nose of the P6M reached for the sky. Now, with the Allisons screaming, the milky foam of the P6M's wake spewed aft in violent whirlpools. A final touch on the yoke and she broke for the blue.

2:50 PM "I'm taking her back over the airport," said Turner over the intercom. "The Navy wants to hear if she's noisy at 5,000 feet."

In the aft end of the pressurized flight deck, Tom Kenny bent over his desk and scribbled in his flight log. Something was wrong with the cabin pressure system. He smiled as he thought how he'd ride Operations Manager Tom Ray.

2:58 PM At 12,000 feet, Bob Turner reached for the toggle switch that actuated the rotary mine door in the P6M's hull. The door, cut spang in the middle of the keel, was perhaps the most important single development in this new water-based attack weapon. With a flip of the switch, the pilot could open a long section of the hull. Inside, 15 tons of destruction could be hung. Turner hit the toggle again and the door rolled closed, the pneumatic tubes automatically sealing the hull watertight again. For good measure, he rolled her open again. Not a quiver.

3:07 PM The P6M bored eastward through the Maryland sky at 25,000 feet. She could climb to 50,000, but for this test the engineers wanted Turner to hit a specific Mach number at 20,000 feet. To do it, he would nose over into a dive until he hit his point, then hold it down through 20,000 feet. The dive would be the payoff for the fix on the P6M's tail.

The P6M's entire stabilizer moves up and down when the pilot pulls back on

the yoke. The elevators attached to the stabilizer ordinarily also move, acting as a secondary force changer. But for this test, the engineers had locked the elevators in place. Only the stabilizer would move. The hydraulic valves in the control system would have to sustain all the load of any maneuver.

3:09 PM Bob Turner pressed the mike button on the yoke. "We're at 25,000 over Tolchester Beach."

"Ready here," said Monitor Room.

Tensely, the chief instrumentation engineer walked again down the line of recorders. They hummed quietly. "Get set," he said.

Chase pilot O. F. Brown, flying an easy 300 yards aft the P6M in a Navy FJ-2, said, "All clear, Bob."

Bob Turner tugged at the faceplate of his helmet. He paused, his eyes sweeping once again over the bank of instruments in front of him. Then, he nosed the P6M earthward. The long, beautifully shaped hull slipped cleanly through the thin air. In seconds he was on his point.

He played the yoke, fighting to stay on his point. "I'm on point at 410 knots," he said to Kenny. "Record it."

"Got it," said Tom Kenny, pressing the buttons that triggered the two cameras for the 50-instrument photo panels.

"On point at 415," said Turner.

"Got it," said Kenny again.

At 20,000 feet, the SeaMaster's speed began to build. In the monitor room, George Rodney watched the telltale jump on the oscillographs. As a pilot, he was more tense than the rest. It's building up fast, he thought. Should he call out to Monitor? Should they instruct Turner to cut it off the way he had been instructed so often when he drove his plane too close to the edge of danger?

But the needles quieted as the speed tapered off. Rodney breathed deeply.

Then Turner's voice came in. He was jubilant. "Real smooth all the way," he said. "No vibration at all."

The mood of the monitor room changed. Everyone smiled and a wave of excited chatter rose. The fix on the tail had killed the shake. For the first time in seven months, the engineers were getting the readings they wanted.

3:24 PM "What's your position now?" asked Monitor.

"Over the Bay Bridge."

The P6M was knifing through the cold November sky at 400 knots.

"Okay," said Monitor, "try it once more, Bob. This time, kick it up almost to Mach one at the same altitude."

Once again he nosed the giant P6M down five degrees. It was not easy to hit the Mach number. He jockeyed the yoke. In today's red-hot aircraft, the hydraulic boosters take much of the natural feel out of the control system.

Then he hit his point. "On point at 415," he breathed. "Record it."

"Got it."

"On at 420."

"Got it."

One more five-second recording as they hurtled past the 20,000-foot mark, and then Bob Turner eased back on the yoke. The huge P6M, hope of the Navy, responded at first and came almost back to level flight. Then she "tucked under" —dropped her nose in an unexpected dive. It was almost exactly like the tuck that Bob Turner had felt dozens of times in other aircraft when he had flown them through the sound barrier—but not quite.

Turner pulled the yoke back. The SeaMaster waited, then slowly lifted her nose and he felt the tension drain out of him.

3:31 PM Then it happened. There was no clap like the buckling of a fuselage. No warning through a yoke gone suddenly mushy. No sudden flick of an instrument needle. But the P6M was unexplainably climbing.

She climbed slowly at first, then faster and faster. Puzzled, Bob Turner tried to figure why as he pushed the yoke forward. The P6M kept reaching.

His eyes swept the panel. Everything was still normal. But the P6M continued her dangerous climb into the blue. He thrust the full strength of his stocky arms against the yoke.

Bill Cunningham looked over at Turner in wonderment, then scanned his instruments. He instinctively reached for his ejection face curtain.

Now the slim grey-and-white hull was almost vertical. Turner's arms were

straight out, his entire body thrown into his desperate heave on the yoke. The G-load was intense; his guts were drawn downward and the grey mist of blackout crept up over his eyes. Slowly, inexorably, his head was driven down onto his chest.

3:31:30 PM An explosion shook the flight deck, and suddenly the cockpit was filled with a strange light. A quick mist swirled through and evaporated. Dust and debris boiled up and clouded the instruments.

Into Turner's ears came the rasping cry of Brown in the chase plane: "P6M, you're breaking up. Bail out."

The leading edge slats had peeled off and whipped aft in the slipstream.

Without thought, almost without motion, Bob Turner reached up and pulled the face curtain . . . and all was serene. He was clear of the plane, rolling gently through the quiet sky. Silently, he fell earthward, spinning first in one direction then another. The seat dropped away from him and he knew that in a moment his chute would open automatically. In the distance he saw Cunningham. The explosion had been his ejection-seat cartridge going off.

In the plane, Bill Compton had felt his body being driven downward toward his desk. He had heard the chase plane's cry and felt the cabin depressurize. He too reached up, and his ejection seat hurled him into the November sky.

Tom Kenny, new to the P6M's crew, was the last to go. The plane, her cameras and all her telemetering gear still faithfully ticking away, had arched over on her back before he knew what had happened. Now, perversely, she started to level out in the inverted position, throwing Kenny violently against his seat belt. He touched the face curtain. Only when his chute had opened did he realize that he had ejected from an 80-ton airplane pulling nine Gs in a loop —with a pencil in his hand. He dropped it into the swampland.

A minute after the last man was out, a sunburst of bright orange flame lighted the sky as the only P6M in existence exploded at 7,000 feet.

3:32 PM In the monitor room, the pens of the recorders danced crazily. In fascinated horror, the engineers watched them, knowing that they told the death of a P6M in mid-air. Then the voice of the chase pilot shattered the stillness: "I've got three . . . no, four chutes. Three of them should go into the swamp area and the fourth one to the south of it."

George Rodney raced out of the room and down the tower stairs. In minutes, he had whipped a crew into helping him launch a bulky P5M and had taken off downwind for the swamps. Even so, Air Sea Rescue Service at Atlantic Beach got there in an SA-16 before he did. By 8:00 p.m., all four crewmen were back at Martin and had recorded their statements.

During the night, search crews painstakingly felt their way through the fields and swamps until they had found every cartridge of recording film and tape. Before dawn, they had been rushed to the Eastman Kodak laboratories for special processing. But Eastman technicians, knowing their crucial importance, suggested that the cartridges be sent to the FBI development labs.

At the same time, over 100 Martin technicians were investigating the crash. About 95 percent of the wreckage was found; parts of it were spread over a 15-square-mile area. Weeks later, after the readings on the tapes had been run through a battery of electronic computers, Martin knew beyond question of doubt why the P6M had suddenly clawed upward in her wild inside loop. Technically, the locked elevator had set up such high moments of force that the hydraulic boost actuator had failed, and the yoke had been useless in Turner's hands.

Ironically, it was the successful fix that led to disaster.

The dramatic mid-air crack-up and bail-out, which might have spelled the end of the SeaMaster project, brought instead a solution. The tapes proved that the big problem—the high-frequency shake—could be licked by modifying the tail. Martin is installing a completely redesigned tail on the P6Ms it will deliver to the Navy next year. By 1960, six YP6M-1s and 18 P6M-2s—$82,000,000 worth—will have been built, for the first water-based attack bomber squadron in history. END

How Much Like You Will He Be?

Science is learning some surprising things about the strange gamble of heredity—and which of your traits you will probably pass on to your child

By Herbert Yahraes

YOU reach down, pick up your young son and swing him high in the air. He looks at you wonderingly. And suddenly you find yourself wondering, too.

What lies ahead for the little guy? What kind of man will he grow up to be? How smart? What likes and dislikes will he have? What skills?

He seems to have inherited his mother's eyes. Has he inherited her musical ability, too, and her amiable disposition? He seems to have his father's hair. Then will he have your bent for mechanics, your way with a football?

Or doesn't heredity count in things like that? Is the important point not what he was born with but how you help him to grow up from now on?

Geneticists have learned a great deal about the inheritance of such characteristics as the curliness of people's hair, the color of their eyes, and their predisposition to certain ailments. They

What We Can and Cannot Inherit

Some characteristics listed here, notably blood type, are entirely determined by heredity. But for most of them heredity plays only a part. A person might inherit

Characteristic	Yes	Probably	Possibly	No	Remarks
Aggressiveness			✔		
Alcoholism				✔	
Arthritis	✔				
Artistic talent		✔			
Blood pressure		✔			
Blood type	✔				**exclusively**
Cancer susceptibility			✔		**yes, for some rare forms**
Color blindness	✔				**almost exclusively**
Courage			✔		
Crossed eyes	✔				**almost exclusively**
Curly hair	✔				
Diabetes	✔				
Dimples	✔				
Emotional stability		✔			**in part**
Eye color	✔				**almost exclusively**
Finger length	✔				
Food, tastes in				✔	
Gestures				✔	
Hairiness	✔				
Hay-fever susceptibility		✔			
Head shape	✔				
Heart-disease susceptibility		✔			**certain types**
Height	✔				**also affected by diet, etc.**
Intelligence	✔				**influenced by environment, too**
Longevity	✔				
Math talent	✔				

know less about how and whether you pass along intelligence, aptitudes, and personality.

But they do have evidence now that almost everything a person is—his mental and emotional makeup as well as his physical—can be attributed in some part to heredity.

Heredity is a great gamble. Your genes, numbering perhaps 20 or 30 thousand, are represented twice in each of your body cells. They are partners, one member of a pair occupying a certain spot on a chromosome and the other occupying the same spot on a duplicate chromosome. They work together to influence a trait, by controlling chemical reactions.

When a new individual is formed, he gets one partner of each pair from his father—*which* partner is a gamble—and the other from his mother.

Given enough information about you and your family, geneticists can quote you odds on some other heredity propositions—for example, against your child's being born with clubfoot, or with Rh-negative blood, or with a tendency to diabetes. Many such traits are controlled largely by one gene in a partnership.

As for personality and behavior, though, no such control has been found.

genes that make him susceptible to an ailment or give him a capacity for a particular talent. But he'll never develop ulcers or become a great musician unless everyday life moves him toward that pattern. It's not certain, either, whether he will pass these particular genes on to his first, second, or any subsequent child.

Characteristic	Yes	Probably	Possibly	No	Remarks
Mechanical knack			✔		
Mental deficiency	✔				**some types**
Money	✔				
Musical talent	✔				
Near- or far-sightedness	✔				
Nose shape	✔				
Obesity	✔				**to some extent**
Pain sensitivity			✔		
Personality			✔		**to some extent**
Polio susceptibility			✔		
Rheumatic-fever susceptibility	✔				
Schizophrenia		✔			**evidence not clear**
Scientific talent		✔			
Self-confidence			✔		
Sex drive			✔		
Shyness			✔		
Sociability			✔		
Sports talent		✔			
Sunburn susceptibility	✔				
Teeth, shape of	✔				
Teeth, susceptibility to decay			✔		**early diet, care important**
Temper			✔		
Tuberculosis susceptibility	✔				
Twins, tendency to have	✔				
Ulcer susceptibility			✔		**evidence not clear**
Writing talent		✔			

In fact, if it weren't for a special case—identical twins—scientists would still be doubting that the genes had anything at all to do with it.

Why *identical* twins? Because they've developed from the same fertilized egg, so they have the same inheritance. *Fraternal* twins, on the other hand, have developed from two separate eggs fertilized by two separate sperm, so their inheritance is no more alike than if they had arrived years apart.

When fraternal twins, or ordinary brothers and sisters, differ in some trait, there's no telling why; but if identical twins differ, the answer must lie in environment, either pre- or post-natal: Their circumstances in the months before birth may not have been exactly the same. Or possibly there has been some difference—scarcely noticeable—in the way they've been brought up.

Fortunately for the science of genetics, every once in a while a pair of identical twins is separated early in life.

Some years ago, for example, two identical twin boys were adopted by different families shortly after their birth and were brought up in quite different circumstances. One lived steadily in Salt Lake City and went through high school. He had a sister. The other wandered

around the country with his foster parents and eventually landed in New York City. He went only a while to high school. There were no other children.

Yet when the two met as young men they showed remarkable similarities. In two I.Q. tests the high-school graduate scored 104 and 101; the other 97 and 98. Both were weak in math. In many cases they missed the same questions.

They got almost identical scores on a test measuring such personality traits as speed of decision, self-confidence, and interest in detail.

One boy was particularly fond of music; the other, of drawing. They both liked sports. Amazingly, both had boxed in public and won championships.

Geneticists and psychologists have studied many other such cases. They have also observed identical twins who have been brought up together, and they have studied what happens when foster children of one intelligence level live with families of a different level.

You do inherit intelligence, they have found. Identical twins usually show only very small differences on I.Q. tests except when there has been a great difference in the twins' schooling. For instance, a girl who had been brought up on a farm and gone only through eighth grade scored 89, while her identical twin, who had lived in a small town and gone through high school, scored 106. In conversation, though, the country girl seemed just as intelligent as her twin. Besides, the difference of 17 points was no greater than you yourself might show if you were tested at two different ages.

In almost every case like this, the twin who has gone to school longer shows a higher I.Q. So, although you do inherit your brain power, your ability to use it to get a high score on a formal test depends partly on your education.

Orphans demonstrate what can happen. When they're adopted into good homes, studies show that not only their personality blossoms out, but their intelligence too. Children of apparently mediocre intelligence will close about half the gap between themselves and their foster parents. For instance, if a child's I.Q. is 80 while that of his new parents is 120, another test within a few years will probably show him at 100. We can't change our heredity, but we can do a lot about how we use what we've inherited.

If you and your wife are both bright, your children are likely to be bright, too. Some may have higher I.Q.'s than you, some lower—and there's no way of predicting how smart any given child will be—but the average intelligence of all of them will usually be about the average of you two.

There's an exception. Parents with a very high average may have children averaging not quite so high. As Dr. Gordon Allen, a geneticist with the National Institutes of Health, explains it, this may be because the high intelligence of the parents was determined in part by their environment, which they probably cannot duplicate for their children. For example, the circumstances that forced you to take a job in order to finish your schooling may have been more advantageous—as far as pushing up your I.Q. goes—than the circumstances that will permit your son to take things easier.

This works the other way, too. Parents with an I.Q. below average may have been held down by a lack of opportunity rather than by an inherent weakness in intelligence. They could have children whose I.Q.'s are average or above.

Because heredity *is* such a magnificent gamble, you may have a musical, artistic, mathematical, or other type of genius among your children even if you and your wife are not so gifted.

Geneticists theorize that a genius arises when all the necessary genes—perhaps dozens are involved—have come together in one person quite by lucky chance, and when this person also has the urge and the opportunity to develop in accord with his capabilities. You may have inherited some of these genes and your wife others but, lacking the whole set, neither of you sets the world afire. It just could be that your little guy got them all.

Genius seems to spring up spontaneously but *talent* often runs in families—shaped in part by the genes but more by family atmosphere and family traditions.

Your boy will get his love of nature from his old man, all right, but he'll get it in large part because the old man will take him on walks and camping trips and point out some of the fascinating aspects of nature.

And if your boy turns out to have a

[*Continued on page 260*]

New Ideas from the Inventors

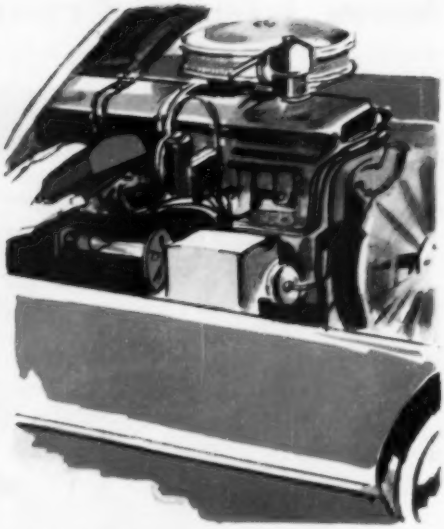
1 Roadside Posts Warn Speeders. Superhighways would be safer, says this inventor, if they didn't lull motorists into driving too fast. To alert careless speeders, he'd arrange parallel rows of posts in a way that would give a passing driver an exaggerated sensation of speed and remind him to check his speedometer.

2 Carpet Heats the Room. Similar in effect to built-in slab-floor heating coils, this electrically heated carpet might be used to warm a room or merely to take the chill off a child's play area. Its electric coils would be safely embedded in the rubber base of the carpet.

3 Washer Meters Its Soap. With this timed powder dispenser on her automatic, a housewife could load clothes and detergent at the same time and then forget her wash. After sitting out the preliminary rinse, the powder would be floated in by incoming wash water.

Please turn the page for more new ideas

More Inventors' Ideas



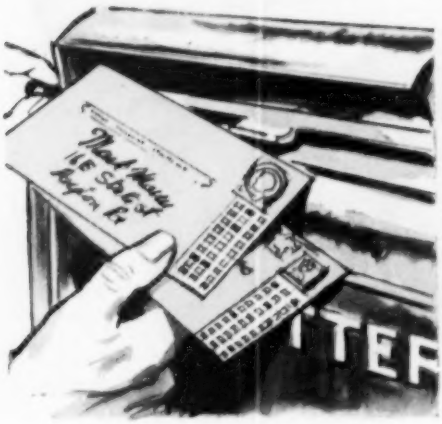
4 Electric Trigger Improves Aim. Squeezing this trigger would close a switch, so the action could be smoother, lighter, and more uniform than that of a conventional firing mechanism. A battery-charged capacitor would build and store the hefty voltage needed for firing.

5 Light Beam Sparks Engine. In this electronic ignition, a photocell—and a light beam to trigger it—would replace distributor and breaker points. A slotted disk or shield rotating between the light and photoelectric eye would time the "contacts" and serve as a distributor.

6 Box Stretches Cab Bed. A long-legged driver could catch forty comfortable winks in the cab of this truck by opening the folding box built into the door. Forming an extension of the seat, the box would provide ample stretch-out room and protect both the cab and driver from the rigors of cold or wet weather.

7 Tear Strip Opens Bottles. You'd have a hard time forgetting to carry an opener for these bottles, because you uncap them with your fingers. Each stamped-metal cap would have several elongated tabs you could pull up when you wanted to loosen the cinched grip.

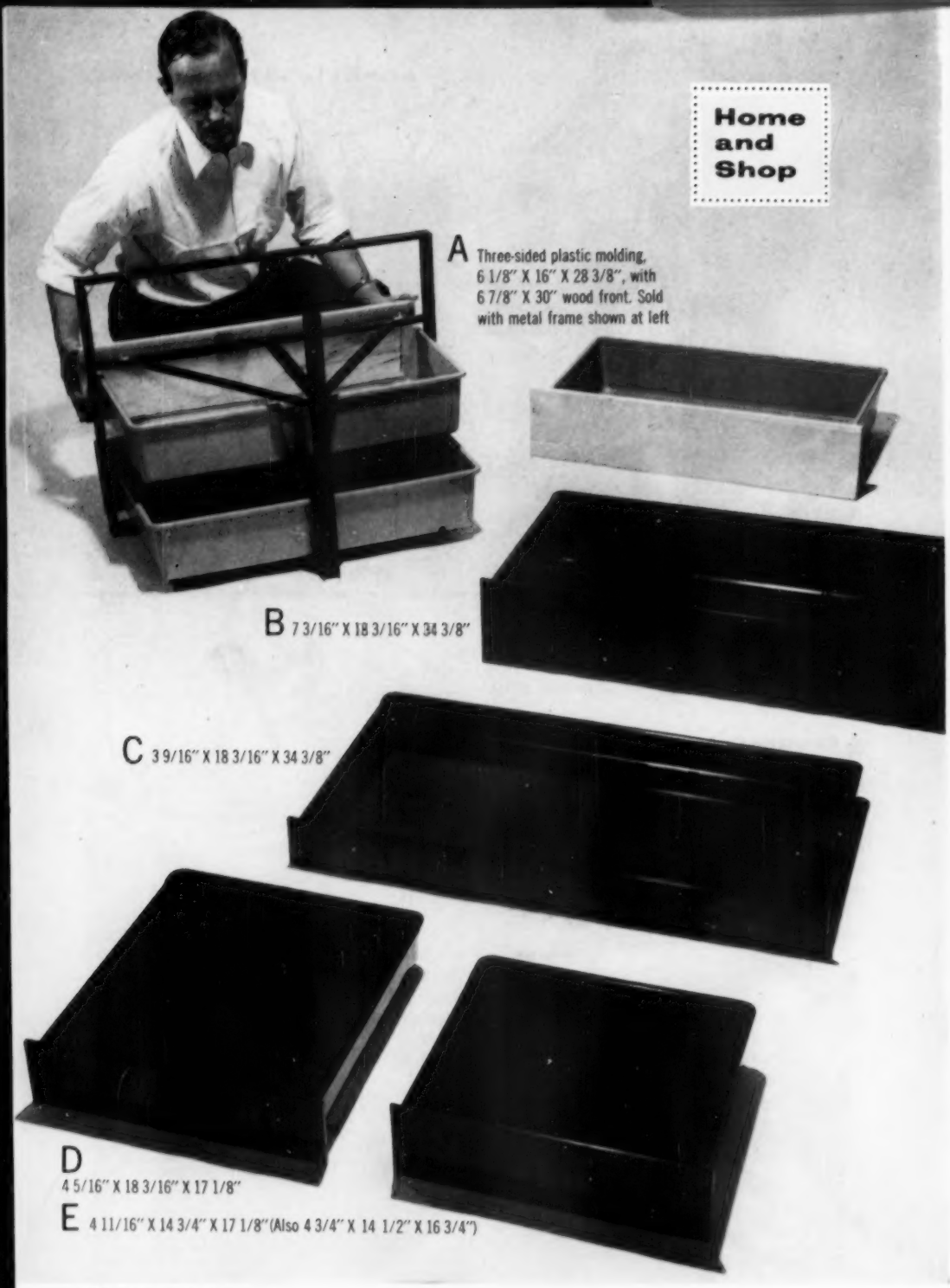
8 Envelope Code Speeds Sorting. Bulk mail could be handled faster if it were separated automatically. Tiny boxes printed on these letters or return cards could be blacked in by the sender or receiver to designate city, state or postal zone. Then electric-eye sorters would quickly shuffle them into related piles.



9 Umbrella Arrow Hauls in Ducks. There's often a big—and deep—gulf between shooting a duck and bagging it. To retrieve waterfowl that fall beyond wading reach, a hunter would launch this dragline with a bow, overshooting the mark. Pulling in the line would spread umbrella-like folds to haul in his game.

The following patents *have been issued on these inventions: 1. Patent No. 2,783,730 to Seymour Robins, NYC; 2. No. 2,771,557 to Morris D. Lichtenstein, Chicago; 3. No. 2,782,621 to Gottfried Leuenberger, Schlieren, Switzerland; 4. No. 2,780,882 to Lemuel M. Temple, North Haven, Conn.; 5. No. 2,787,649 to James W. Ballard, Dayton, Ohio and Milton M. Moorhead, Jr., Stamford, Conn.; 6. No. 2,782,068 to Delbert E. Esche, Dearborn, Mich.; 7. No. 2,776,065 to Ferdinand J. Loretitsch, Brooklyn, N. Y.; 8. No. 2,775,405 to Louis Paston, NYC; 9. No. 2,722,075 to Elmer L. Abrassart, Vincennes, Ind.*

Copies of patents may be ordered, by number, from the Commissioner of Patents, Washington 25, D. C., at 25 cents each. To write to an inventor, if the address given above is insufficient, you may address him (by name and patent number) in care of the Commissioner of Patents.


Home and Shop
A Three-sided plastic molding, 6 1/8" X 16" X 28 3/8", with 6 7/8" X 30" wood front. Sold with metal frame shown at left
B 7 3/16" X 18 3/16" X 34 3/8"
C 3 9/16" X 18 3/16" X 34 3/8"
D 4 5/16" X 18 3/16" X 17 1/8"
E 4 11/16" X 14 3/4" X 17 1/8" (Also 4 3/4" X 14 1/2" X 16 3/4")

How You Can Use Molded Drawers

Now here in new sizes, they short-cut many cabinetmaking jobs

By Ralph Treves

WHEREVER an extra drawer is needed around the house—in a kitchen cabinet, desk, pantry, shop or attic—you can install one in less than 10 minutes with just a screwdriver.

Sound too good to be true? Not today! All you do is screw on the rails. The drawers come ready to roll.

Factory-made drawers of molded plastic are practical, good-looking and free of the age-old troubles that beset conventional drawers. They come in a half-dozen sizes, including a big 34⅜" width suitable for under-the-bed storage of linens and blankets. Additional sizes are in prospect as the drawers come into wider use.

Two types are available. The first consists of a one-piece seamless molding. The other is a three-sided molding with a wood front.

The one-piece drawers, molded of black Bakelite, are now available in five sizes through building-supply dealers or direct from manufacturers (see names and addresses below). All-molded drawers may cost you more than similar sizes built at home of wood or plywood, but ease of installation and trouble-free operation are important compensating factors, especially for the amateur builder.

You can install the one-piece drawers on wood guides just as you might home-

NO TRACKS OR FANCY FITTING are needed to install this plastic drawer. A single center rail built into the cabinet fits in a groove molded in the underside of the drawer bottom.

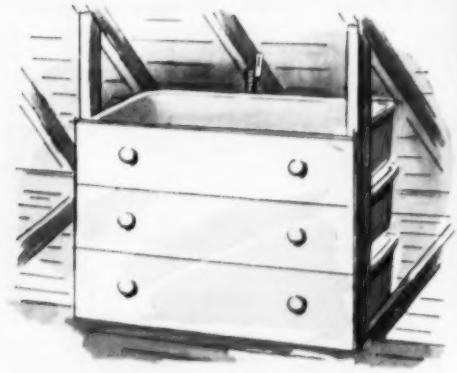
TO HANG A DRAWER under a shelf, counter or workbench, all you need are two metal tracks screwed to wood cleats. The tracks grip the drawer by lips molded into the upper edges.

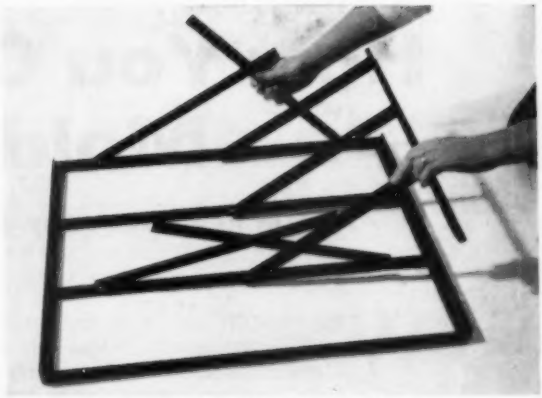
The plastic drawers you now can buy

- Wood-front plastic drawers: A (top left), sold in units of two, three, four, five and six with a metal frame. Prices range from about $21 for a two-drawer unit to about $54 for a stack of six drawers. Obtained from building-supply dealers or maker: Reiss Mfg. Co., 111 Fourth Ave., New York 3, N. Y.
- Individual drawers: B, priced at about $11.50; C, about $9.50; D, about $6—all of one-piece seamless Bakelite—from dealers or Knoll-Drake Co., 575 Madison Ave., New York 22, N. Y.
- Available only in cartons of four for about $20 from the maker (E): Boonton Molding Co., Boonton, N. J.

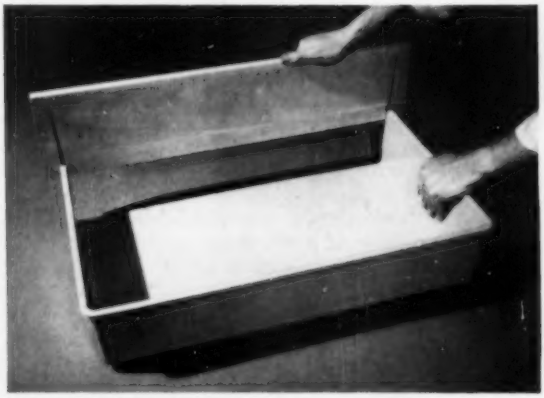
Self-supporting drawer units are ready to use

STACKED DRAWERS, supported by a metal frame, can be used as a form around which to build a simple cabinet, can be built into a wall, or can be left exposed as in a cellar or attic. They come in two- to six-drawer assemblies.





KNOCKDOWN FRAME is tailored to fit the number of drawers ordered. Its welded steel-angle parts fold flat for shipment, swing open for easy setting up in a few minutes.



WOOD DRAWER FRONT is factory-grooved to lock over lugs molded on the front edges of the drawer sides. Grooves are cut at a slight angle to match the tapered sides of the drawers.

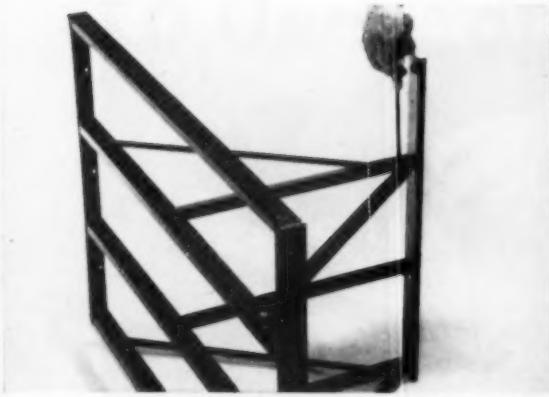
made drawers, or you can buy metal hanger-tracks for fast installation and smooth operation.

Flanges along the drawer sides slide smoothly in the tracks. A built-in stop prevents accidentally pulling the drawer all the way out and spilling the contents, yet a slight upward tilt permits easy removal. Deep ridges in the bottom add strength and also serve as guides to run on wood cabinet rails when installed like conventional drawers.

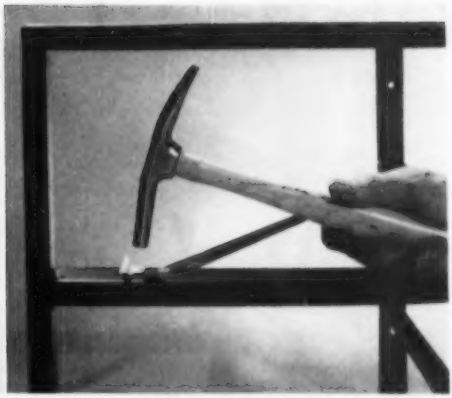
Some plastic drawers have inside ridges, and dividers can be added to partition the drawers for neat storage of silverware, jewelry or small items. The fronts can be painted or surfaced with wood veneer or a plastic laminate to match their surroundings.

Wood-faced plastic drawers are available in just one size. You can't buy the drawers alone; they come with a supporting metal frame made to hold two, three, four, five or six drawers. The frame height varies from 15¾″ for the two-drawer unit to 45¾″ for six drawers.

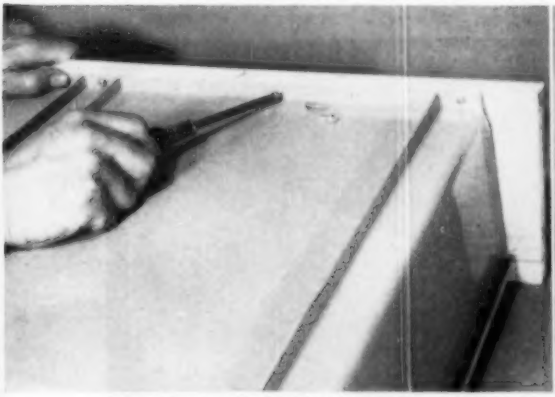
Frames come knocked down for compact shipping, but can be assembled in a few minutes with a couple of bolts. The wood drawer fronts have factory-cut grooves that lock on the front edges of the three-sided Styrene moldings.



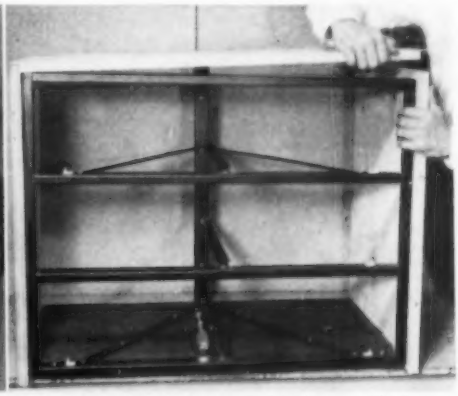
ONLY TWO BOLTS are used to lock the skeleton drawer frame together. Steel center rails fit grooves molded into the drawer bottoms. Frame is braced against twisting and warping.



SMOOTH DRAWER OPERATION is assured by nylon bearings that are driven into predrilled holes in the metal frame. On the bearings, drawers move silently and with little effort.



SCREWS DRIVEN THROUGH LIP on the bottom edge of the drawer secure the wood front after it is slid down over the lugs on the sides. The wood front can be finished natural or painted.



BUILDING A CABINET around the metal drawer frame requires only facings of veneered plywood. Plywood is attached with screws from inside through predrilled holes in the frame.

The self-supporting, multiple-drawer units can be installed as built-ins between the studs in walls or under attic eaves or stairs. The frame can also be installed in existing cabinets or cupboards by adding wood trim to make up any difference in dimension between frame and cabinet. Or you can use one of the units as the base framework and build a cabinet around it.

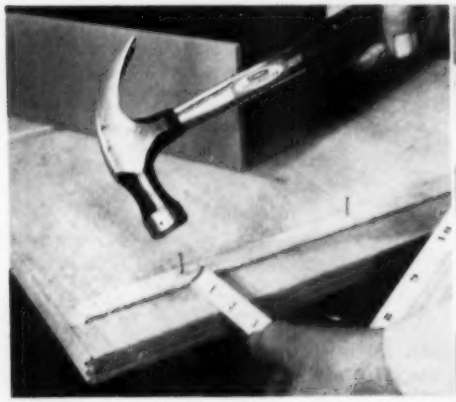
Installing them is simple. You use molded drawers pretty much as you would ordinary wood drawers. The big difference is that you build a cabinet to fit a group of drawers instead of fitting individual drawers to a cabinet.

The easiest application of one-piece drawers is under a shelf wherever there is sufficient space. Attach the metal tracks to 1"-square cleats and screw the cleats, a drawer's width apart, to the underside of the shelf.

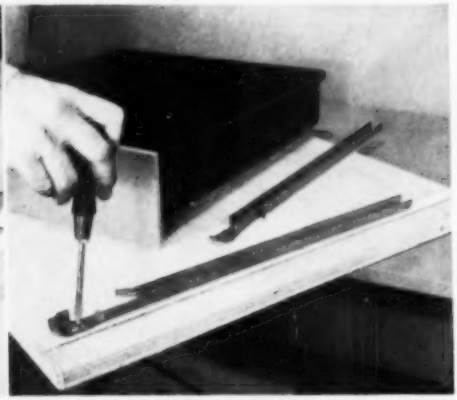
In an existing cabinet, either type of drawer can be used, depending on how it fits the existing dimensions. If the drawers are not the exact width, the cabinet opening must be reduced by adding wood at each side and at top and bottom. Then you screw the tracks to wood shims to bring them into position for the drawers.

If the wood-faced drawers are used, the

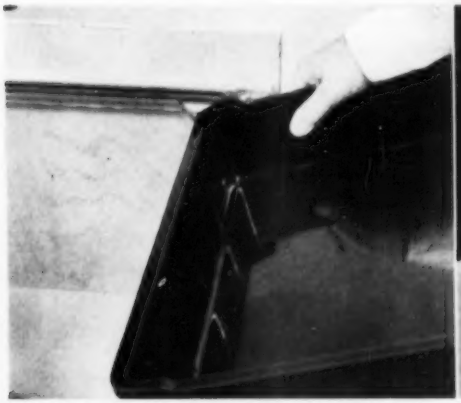
How to install one-piece drawers on tracks



FILLER STRIPS of thin wood are first nailed to sides of cabinet to space the tracks out if you want drawers to fit flush with the front. Measure carefully so the tracks are parallel.



METAL HANGER TRACKS are then screwed in place over filler strips. Screw holes in the track are slotted to permit adjustment to align drawers with each other and with sides of the cabinet.



FLANGES ON SIDES OF DRAWERS slide in tracks. Drawers must be tilted upward when being installed. Tabs on front end of the tracks keep the drawer from being pulled out too far.

NEAT FIT is obtained after making fine screw adjustments to bring drawer flush with cabinet when closed. Drawer fronts can be made to overlap cabinet sides by omitting filler strips.

metal frame must be installed in the cabinet and wood added to reduce the opening to the frame size. Either type of drawer can be used if the cabinet's center guide rails can be adapted to fit the ridges molded in the drawer's bottom.

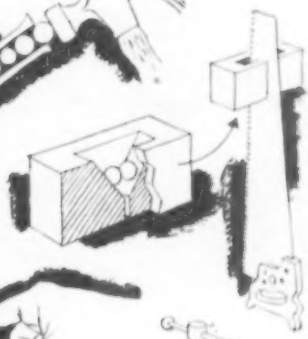
In a wall opening, the wood-faced drawers have an advantage. The metal frame is 30⅛″ wide to fit inside standard 16″-center wall studding (you remove one center stud) with ¼″ allowance for fitting.

Once installed and screwed to the wall studs, the frame provides full support for the drawers, and the wall paneling is fitted around them. Adjust the fore-and-aft position of the frame so the drawers are flush with the wall surface when closed.

To build a new cabinet, attach the sides, top and back to the metal drawer frame. The result will be a solid, wobble-free unit in which the drawers are held in correct alignment. If the one-piece drawers are used, tailor the cabinet's dimensions to fit the drawers with enough clearance on each side to allow for the metal tracks. END

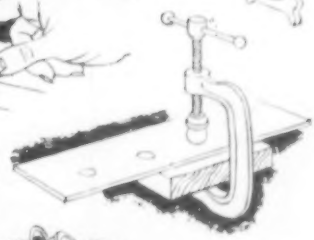
10 Uses for Steel Balls

STRAIGHTEN KINKS in metal tubing by ramming in progressively larger steel balls until the final one is just the diameter of the tubing. Drive through the final ball by tapping it with a steel rod.



A RACK FOR A HANDSAW can be made by sawing part way through a two-by-four and then chiseling out a V-shaped slot just wide enough to place two balls at the top of the kerf. When the blade is pressed into the slot the balls will grip it.

DETECT SLOPING FLOORS, in a house you may be planning to buy, by using a steel ball as the sleuth. If the ball rolls, the floor is uneven.

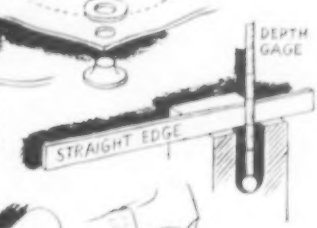


COUNTERSINK LIGHT METAL for screwheads by forcing a steel ball into the metal with a C clamp. Back the metal with a wood block, aligning a drilled hole in the wood with the ball.

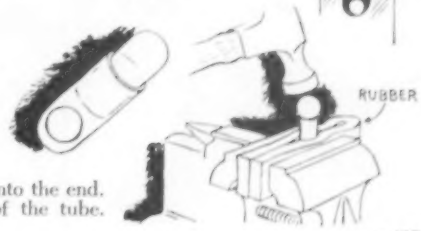
MIX PAINT quickly and thoroughly by shaking the can with some steel balls inside. Leave the balls in the can until it's empty, then re-use them.

ACCURATE CIRCLES can be drawn from the center of a hole by anchoring one leg of a pair of dividers in a steel ball drilled to receive a leg. Anneal the ball first by heating to a glowing red and letting it cool off gradually. You can then drill the hole in a lathe or drill press.

FASTEN A GROMMET in canvas by starting it with a steel ball. Flatten the grommet the rest of the way with a few direct hammer blows.



MEASURING HOLE DEPTH is often tricky because the drill leaves a sloping bottom. You can get around this by measuring to the top of a steel ball and adding the ball's diameter.

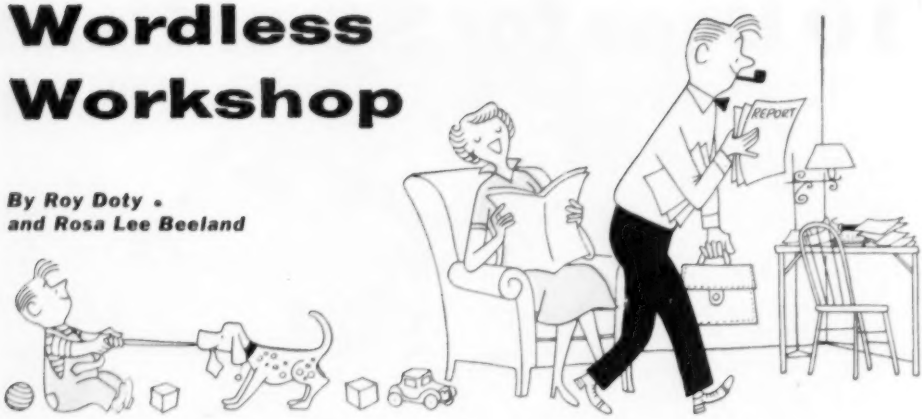


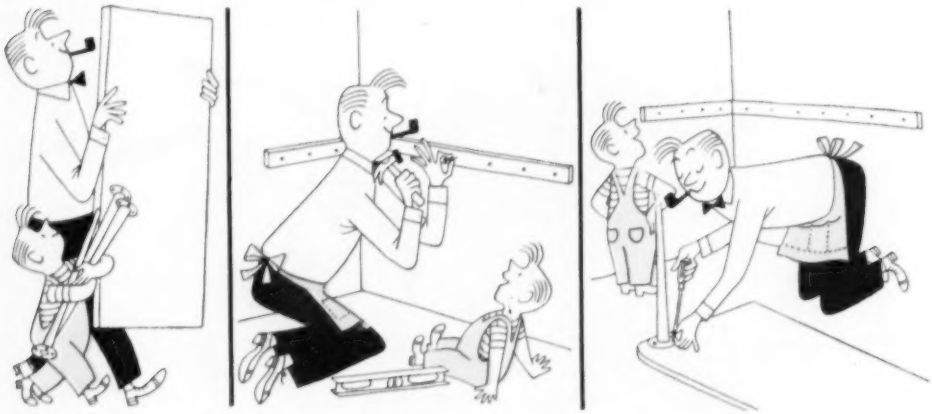
KIDS ENJOY PLAYING with a medicine capsule that flips end over end down a sloping surface. A steel ball inside animates the capsule.

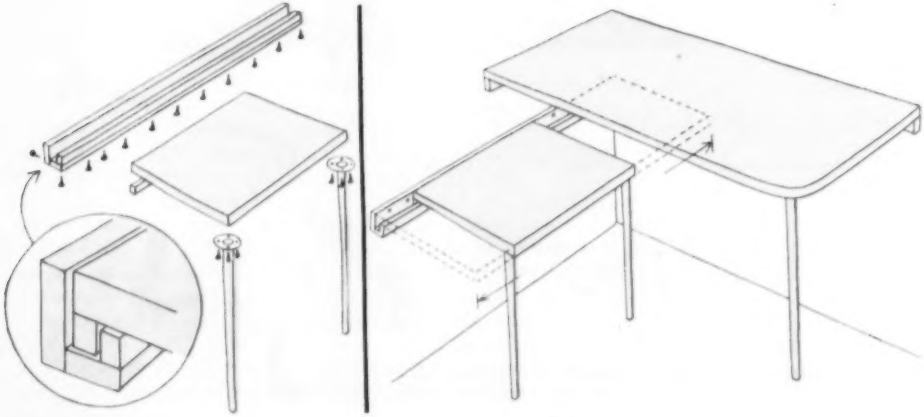
FLARE METAL TUBING by tapping a steel ball into the end. Use a ball that is slightly larger than the bore of the tube.

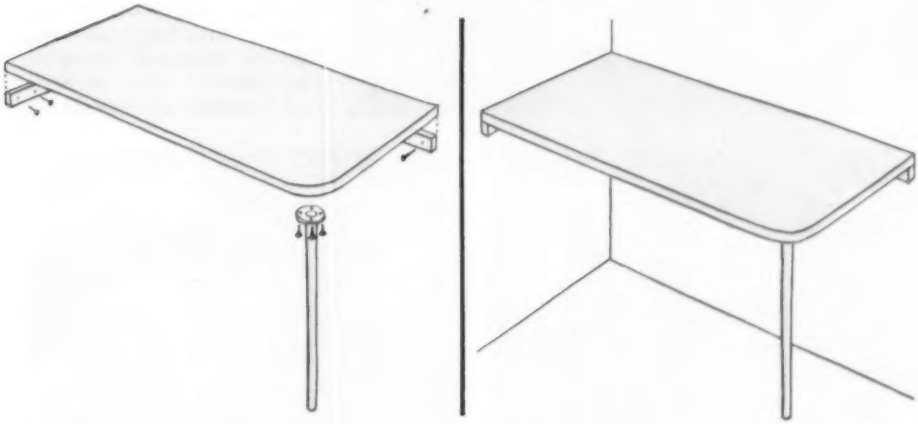
Wordless Workshop

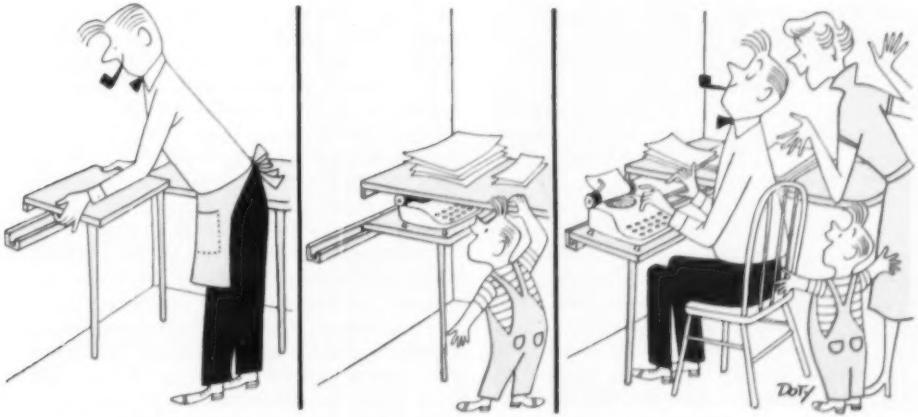
By Roy Doty
and Rosa Lee Beeland











Next Month: A baby stroller gets runners for easy use in snow

New for the Handyman

1. Rubber-in-a-tube requires no patch and no vulcanizing tools to make a repair. You simply squeeze it over a cut in a tire, or a tear in a raincoat, and let it dry for a half hour. As chemical action vulcanizes it without heat, it forms a tough and resilient patch, black in color.

The putty-like rubber makes a coating that is rustproof and non-inflammable as well as waterproof. It will mend plastic and canvas, seal holes in vacuum cleaner bags and hoses, fill in damaged insulation on electric wires or serve as a calking compound.

2. Prefinished wood by the sheet makes covering walls with genuine wood as easy as hanging wallpaper. The 3′-by-6′ flexible sheets are made by backing fine veneers of birch, walnut, oak and other woods with felt or canvas. You choose the backing to suit your particular application. A clear vinyl coating makes the wood stain and scuff resistant.

Not only walls, but cabinets, table and counter tops, floors and ceilings can be covered with the material. You can cut it with a knife or sharp scissors and bend it smoothly around curves. Glue, contact cement or mastic will bond it to stone, wood, metal and many other surfaces. No special clamps are needed.

3. Tape sticky on both sides does many little gluing jobs without mess. You just stick it on the back of whatever is to be fastened down and then press the object in place. It's fine for sealing envelopes or mending torn wallpaper, and it will mount photos invisibly. Try it, too, for holding screws on a screwdriver, attaching felt pads to ornaments, or securing a loose innersole in a shoe.

Although both sides of the new Scotch Tape are adhesive-coated, the two adhesives are incompatible and won't stick to each other. Yet they'll stick to almost anything else. The adhesive on the upper side seems less tacky to the touch, but both have the same holding power.

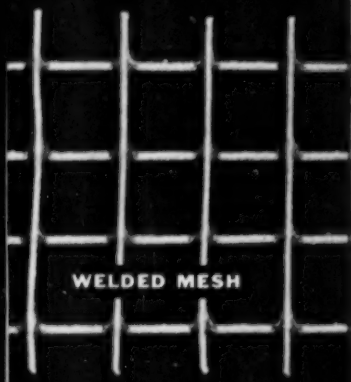
4. Translucent door panel has curls of cedar wood sandwiched between two sheets of plastic. Strengthened with glass fibers, the plastic won't shatter, and the dead air in the space between the double walls provides good insulation.

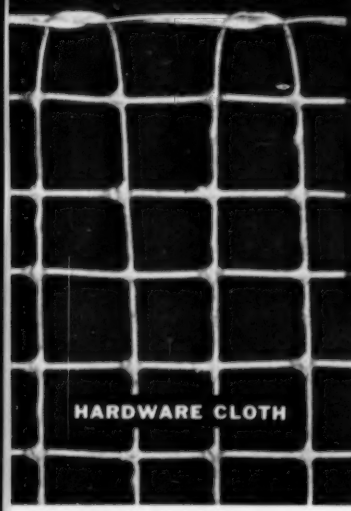
You can buy the panels in stock sizes 3′ to 4′ wide, 8′ to 10′ long, and cut them to fit the opening after removing the glass or wood paneling in a door. Or the manufacturer will cut the material to your specifications. Thicknesses range from 3/8″ to 1½″ to suit various doors. The panel is set into the opening like glass and held in place with molding.

Both interior and exterior doors can be fitted with the decorative plastic, and there is a choice of 22 colors. You can also install it in a window to block out a drab view, or use it to make light-admitting partitions and room dividers.

5. To save your hands when you tackle rugged jobs like working with rough stone, mixing up lime or wrestling with big boulders, you need a work glove that won't slow you down or impede your grip. This one, made of tough cotton twill coated with black neoprene, is said to be highly flexible and more slip-proof than bare hands. And its skin-protecting rubber coat is resistant to acids, solvents, oils, caustics and other chemicals. Knitted wrists hold the gloves in place and a cotton lining absorbs perspiration.

More information *about these products can be obtained from: 1. Woodhill Chem. Mfg. Co., 1391 E. 33rd St., Cleveland 14; 2. Great Eastern Lumber Co., Box 223, Glens Falls, N. Y.; 3. Minnesota Mining & Mfg. Co., St. Paul; 4. Russell Reinforced Plastics Corp., 521 W. Hoffman Ave., Lindenhurst, N. Y.; 5. Pioneer Rubber Co., 196 Tiffin Rd., Willard, Ohio.*





Money-saving pointers and trouble-saving tips:

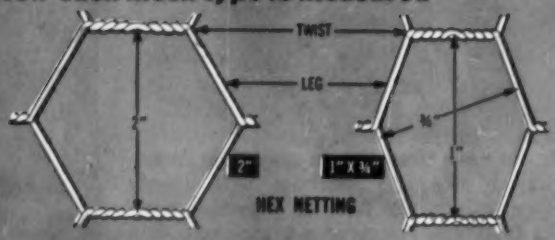
Practical Guide

EVERY householder ought to know the relative merits of three kinds of wire mesh found at most hardware stores—hexagonal netting (or chicken wire), welded mesh and hardware cloth.

You can use them for an endless range of jobs. On the smallest budget, too; prices start at 2½ cents a square foot. For some jobs, any kind of mesh is suitable. For others you'll need a specific type, grade, mesh and gauge.

Choosing mesh and wire size. The bigger the mesh and the lighter the wire, the less the cost. For economy, use the biggest-mesh, lightest-gauge material that will do the job right. Choose wire size on the basis of the abuse the material must take and on mesh size. In general, favor heavy wire for large mesh, light wire for small mesh where you have a choice. Use heavy-gauge wire, too, where excessive corrosion may occur—in

How each mesh type is measured



TRUE HEXAGONAL NETTING is measured from twist to twist. For irregular patterns two dimensions are given: the first from twist to twist, the second from one wire leg to opposite wire.

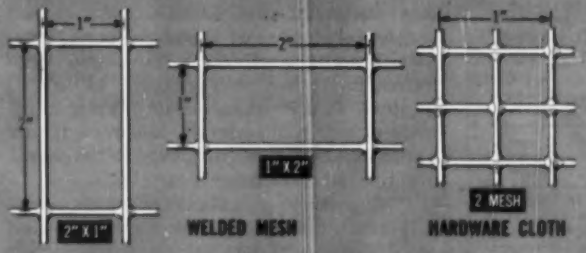
to Wire Mesh

chimney spark guards or devices near seashore salt spray, for example.

Hex netting (chicken wire). Lowest in price, hex netting has a give and stretch that welded-wire mesh and hardware cloth do not. As a baseball backstop or tennis-court enclosure, its cushioning ability drops even the fastest ball to the ground without bouncing it back.

The same flexibility makes it top choice as a plaster reinforcement to minimize cracking from sharp temperature or humidity changes during a plastering job. In earthquake areas it holds ceilings together and greatly reduces the danger of falling plaster.

Where appearance is important, this stretching quality is a drawback. Hex netting can't be drawn flat and taut over a framework as neatly as welded mesh or hardware cloth. You have to choose between beauty



For welded mesh, vertical distance between wires is given first, then horizontal. Hardware cloth is designated by number of square openings per inch or by actual measurement.

WHAT SIZES TO USE

MESH AREA AND GAUGE OF THE WIRE are both given when you designate sizes of wire mesh, the mesh area first and the gauge second, as you see in the chart below. For an explanation of how mesh area is measured for different types, see the sketches on preceding pages.

	HEX NETTING		WELDED MESH		HARDWARE CLOTH	
FOR FENCING:						
Lawns	2"	20	2"x2⅝"	16	2 mesh	19
Play area	1"	16	2"x1"	14	1 mesh	14
Flower bed	2"	20	2"x2⅝"	16	2 mesh	19
Vegetable garden	1"	20	1"x2"	16	2 mesh	19
Tennis court	1½"	18	1"x2"	16	¾x¾	16
Baseball backstop	2"	14	1"x2"	14	1 mesh	14
FOR REINFORCING:						
Terrazzo floor	1½"	16	1"x1"	16	¾x¾	16
Concrete floor	2"	16	1"x2"	16	¾x¾	16
Stucco	1½"	16	1"x2"	16	2 mesh	19
Plaster	1"	20	1"x2"	16	3 mesh	21
Boiler insulation	1"	20	1"x2"	16	2 mesh	19
MISCELLANEOUS:						
Support for roof insulation	2"	20	2"x2⅝"	18	¾x¾	16
Vegetable bins	1"x¾"	18	½"x1"	16	2 mesh	19
Chimney spark guards	—		½"x½"	16	2 mesh	16
Rain-gutter guards	—		—		4 mesh	23
Basement partitions, wire	1"	20	1"x2"	16	¾x¾	16
Trellises	2"	18	2"x2⅝"	18	¾x¾	16
Brazier grilles	—		½"x1"	16	—	
Rubbish burners	—		1"x2"	14	—	
Screen-door guards	—		1"x1"	16	2 mesh	19
Machinery guards	—		½"x1"	16	⅝x⅝	14
Window guards	1"x¾"	18	1"x1"	16	¾x¾	16
Tree guards	—		½"x1"	16	3 mesh	21
Attic-fan guards	—		½"x1"	16	2 mesh	16
Bird cages	—		½"x2"	16	—	

and your budget for decorative jobs.

Welded wire has the handsomest appearance of the three. Wires run straight, without weaving over and under one another. The galvanized finish is smooth and lustrous. It looks appropriate as a cabinet grille, either as it comes or with a coat of paint over a zinc primer.

Even direct flame won't melt the welded joints, so you can build a rubbish burner or charcoal grill with it. If you want a large brazier, use welded-wire loop fencing (ornamental wire fence)—it comes in heavier (9½-gauge) wire.

The wire in welded mesh is stiff. If you bend it into shapes, make the shapes as simple as possible.

A rectangular wire mesh—which costs less than comparable square mesh, incidentally—makes a fence that youngsters can't climb. The vertical wires are no more than an inch to an inch-and-a-half apart, leaving scant room for the toes of a young climber.

Special types of welded mesh and ornamental wire are made for this kind of fencing. Some are sold by the foot, others by the 50- to 150-foot roll.

Hardware cloth. Most pliable because it's generally softest, hardware cloth is best for complex shapes: wire baskets, small cages, traps. It's also the material to use where small, strong mesh is needed. Hardware cloth comes with a mesh as small as eight squares per inch, compared to the ½"-by-½" minimum in welded mesh.

Though its zinc-soldered joints won't stand up under direct flame, hardware cloth is easily formed into such devices as spark guards. It holds its weave even after its galvanized coating is melted.

Special types of mesh. Very heavy wire fencing and fabric is widely used industrially, but don't expect to find it in stock at a hardware store. Your hardware dealer will order it, however, if you know exactly what you want after checking the manufacturer's catalogue.

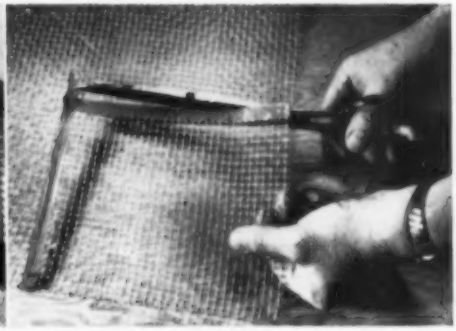
Two grades of galvanizing. Hex netting and some types of welded mesh and ornamental wire fencing are made in two rustproof grades. An economy grade is galvanized before weaving or welding. A top durability grade is galvanized after the wire strands are joined; it has a zinc coating six times as thick as that on the economy grade.

Any hardware cloth you buy is necessarily coated with an extra-thick layer of zinc. It must be galvanized after the strands are laid in place because the zinc actually solders the wires where they cross. This holds the weave and gives the material much of its flexible strength.

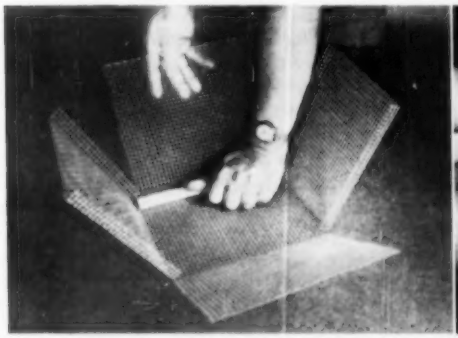
Where you have a choice, use the econ-

How to work with hardware cloth

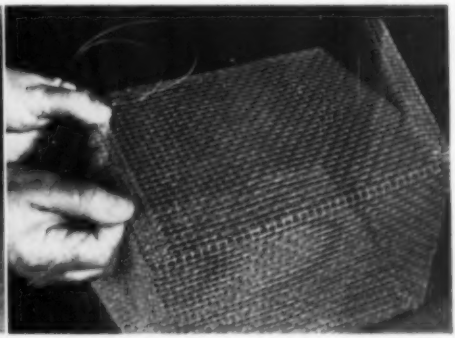
USE A RULER as a cutting guide for a precise job; wires don't always run as straight as they look. Square the job with finished edge of material. Mark the line with masking tape.



OLD PAIR OF LARGE SCISSORS works fine for straight-line cutting. But be careful of the cut edges. You may want to don light gloves to ward off the possibility of getting scratched.

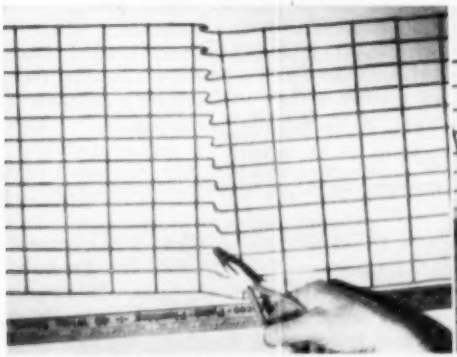


MAKE STRAIGHT BENDS by using straight-edge wood strips. Always try to make a bend between the wires that run parallel to it. Bending where wires cross may loosen joints.



LACE SEAMS TOGETHER, with same kind of wire the netting is made of, and you've a useful spark guard for chimney. Same kind of wire is used to avoid destructive electrolytic action.

How to work with welded mesh



CRIMPING WIRE angles it to follow the contour of hilly terrain, eliminating the need to cut and lace several separate pieces together.

A GATE can be made by cutting the horizontal wires midway between vertical ones and bending the cut ends as shown in the photograph.

Shopping facts about wire mesh

Hex netting. You can buy this in 150′ rolls of the following widths: 12″, 18″, 24″, 36″, 48″, 60″ and 72″. Common mesh openings include 2″, 1½″, 1″, 1″ by ¾″ and 1″ by ½″. A 150′ roll of 20-gauge hex netting 48″ wide costs about $12 with a 2″ mesh opening. The same size roll of netting with a 1″ mesh opening comes to about $23.

Welded mesh. A 100′ length is most common, with widths of 12″, 15″, 18″, 24″, 30″, 36″ and 48″. The 15″ width doesn't come in all mesh sizes. Mesh openings include: 2″ by 2⅝″, 1″ by 2″, 2″ by 1″, 1″ by 1½″, 1″ by 1″, ½″ by 2″, ½″ by 1″ and ½″ by ½″. Very heavy gauge fencing comes in 4″-by-2″ mesh and larger. You pay about $27 for a 100′ roll of 16-gauge welded mesh 48″ wide with a 1″-by-2″ mesh opening. A roll the same size with a 1″-by-1″ opening costs about $29.

Hardware cloth. Also commonly made up in 100′ rolls, this type wire comes in widths of 24″, 30″, 36″ and 48″. Not all sizes come 30″ wide, but some heavy-gauge cloth comes 60″ and 72″ wide. Common mesh openings include: ¾-by-¾ mesh, ⅝-by-⅝ mesh, 1 mesh, 2 mesh, 3 mesh, 4 mesh and 8 mesh. For a 100′ roll of 19-gauge cloth 36″ wide having 2-mesh openings, expect to pay about $32. A roll the same length and width, but 23 gauge and 4 mesh costs in the neighborhood of $37.

omy grade for temporary things like an enclosure for newborn pups or for indoor use as on vegetable bins. For permanent outdoor applications you will want the "galvanized-after" grade.

Working with wire mesh. Tin snips or an old pair of large scissors will easily cut through lightweight hex netting or hardware cloth. Scissors cut a straighter edge because their blades are longer. The heavier-gauge wire, including most welded mesh, won't yield to anything less than tin snips or wire cutters.

In farm country, hex netting is usually fastened to a framework or post with galvanized nails driven in halfway and clinched over the wire. When there's a lot of fencing to be done nails go in faster than staples, but staples make a neater-looking job.

Both staples and nails give maximum holding power when driven where mesh wires intersect.

Fencing for poultry and small animals should be fastened every 6″, with the mesh drawn taut to prevent gaps between it and the framing. For dogs, space the fasteners 4″ apart and reinforce the line of fasteners with a wood molding. Screw the molding to the enclosure framing at one-foot intervals.

If an enclosure has no floor, the mesh should be carried across the bottom to prevent animals from burrowing under the sides. Cover all cut edges inside the enclosure with wood strips, to prevent injuries.

Post spacing for welded-mesh or hardware-cloth lawn fencing should be about 8′ on centers. Around play areas better make it 6′ between posts. The same goes for welded loop fencing.

Low mesh or loop fencing up to 24″ wide, often used around circular flower beds, will stay up in most cases without posts or stakes. A special border fencing for flower beds is made of 18″-wide mesh and often sold in 50′ rolls, with enough wire stakes for 4½-foot spacing. This kind can be rolled up for the winter, stakes and all, and stored away until the next spring.

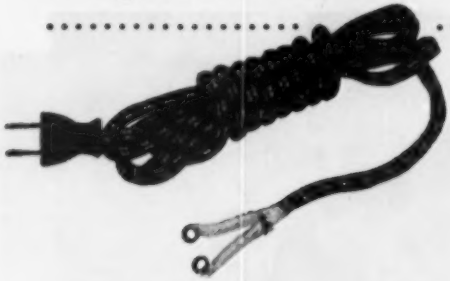
Wire mesh used as lawn fencing makes an attractive support for climbing vines. Mounted vertically on the side of a building, the mesh serves equally well as a purely decorative trellis.

A word of caution on working with any wire mesh: The cut ends can inflict painful scratches and punctures. A thin pair of leather gloves will guard you against most of these minor hazards. END

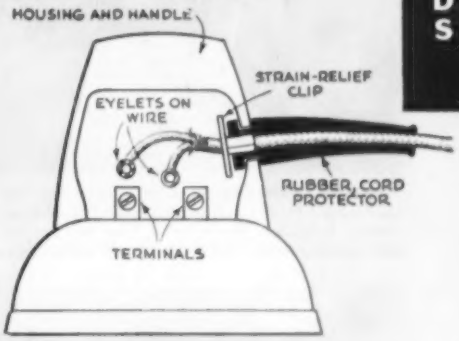
Irons usually outlive cords several times over. Next time an iron in your home needs a cord repaired, why not do the job yourself? Save this data sheet and use it as your guide. It's one of a series of helpful fix-it sheets appearing each month in POPULAR SCIENCE.

Next month: Chair repairs.

Popular Science Fix-It File

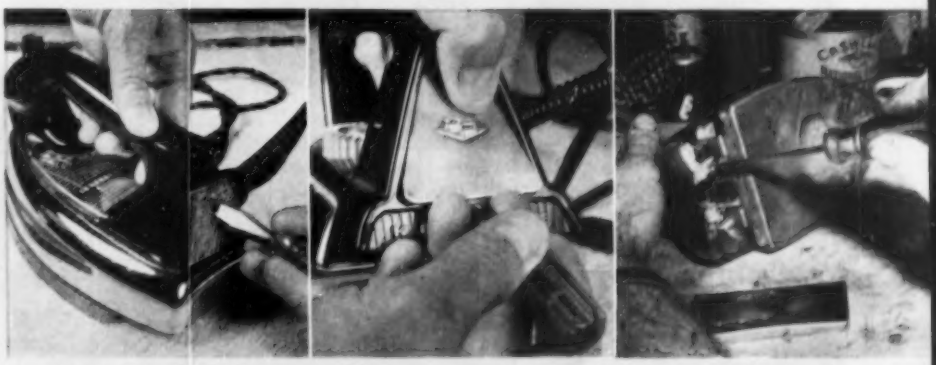


CORD IS PROTECTED on most irons by a strain-relief clip inside and a rubber or coil-spring guard around the cord at the point where it enters the iron.

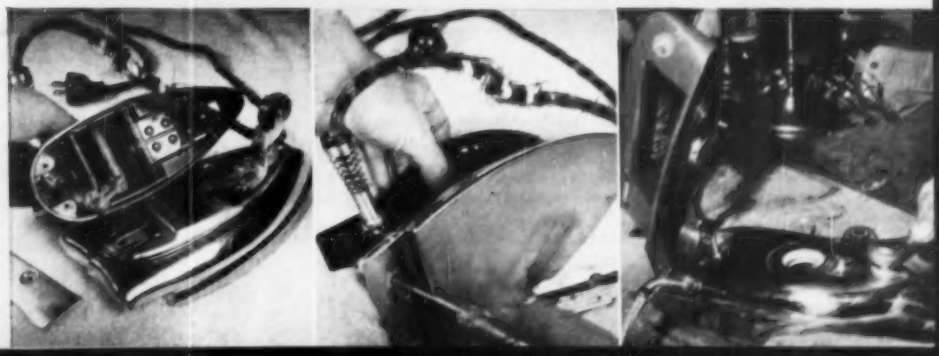


A NEW CORD with asbestos insulation, a rubber or plastic plug at one end and brass eyelets at the other is best for replacement of old cord with frayed insulation, broken wire or damaged plug. Buy 16-gauge wire, not the smaller 18-gauge, if there's a choice. For the few irons that still use detachable cord with female plug at the iron end, a new cord is also the safest and simplest repair. You can get new cords from electrical-supply stores or also through mail-order houses.

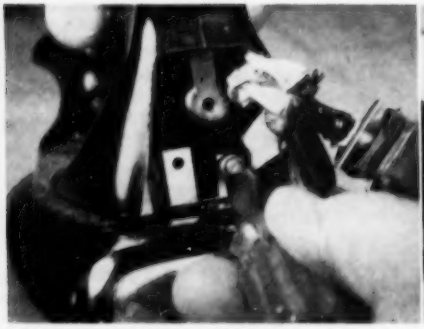
How to remove the damaged cord from the iron



GETTING AT THE TERMINALS varies with the iron—as you can see in these typical assemblies. In No. 1, removal of cover plate reveals terminals in a cavity in handle. Slip a knife or screwdriver under the nameplate of No. 2 and pry it loose. Cover plate under the body hides the terminals in No. 3. Where you find no cover plate, chances are the upper part of iron must be removed (No. 4). After removing nameplate in No. 5, reach through holes as shown and loosen two screws. For the steam iron in No. 6, turn up handle after loosening fastener at front. Then use Allen wrench to remove dial at rear and another wrench (as shown) to unscrew nut at front. Shell can then be lifted up.



How to put in the new cord



UNSCREW TERMINAL SCREWS to remove the old cord. If the terminals are burned or pitted, brighten them with fine sandpaper and replace terminal screws with new ones.

PRY OPEN THE STRAIN-RELIEF CLIP—the gadget that keeps the pull off the terminals. Slide the clip off the cord, then pull the cord through the rubber cord-protector.

SLIP THE NEW CORD through the cord-protector and then slide the strain-relief clip up far enough to keep the wires slack at the terminals. Squeeze the clip on the cord.

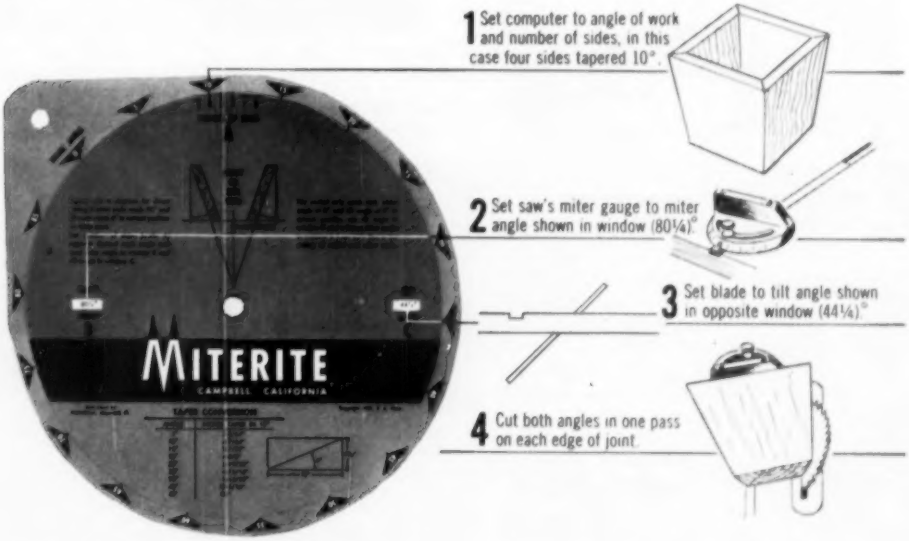
INSERT TERMINAL SCREWS in wire's eyelets and tighten them securely. Fit the strain-relief clip and the cord-protector in position in the handle and install cover plate.

Replacing a damaged plug

IF CORD IS IN GOOD CONDITION, and only the plug is damaged, replacing the latter will be sufficient. For the type of plug shown, pry the filler from between the prongs. Squeeze prongs together to release them from plug, pull them out, and unscrew screws. Run cord through new plug, wrap the twisted ends of the wires clockwise around terminal screws and tighten the screws. Pull on cord to seat prongs. Replace the filler.

1. Saw Cuts Flush. The offset blade on this electric saw lets you make cuts in corners and flush with any surface. With it you can trim bolts, pipe, conduit and nails flush with the floor, or work between baseboards and wall to slice through nails. The offset arm is reversible for right- or left-hand cuts.

2. Wrench Is Self-Adjusting. Place the movable head of this wrench loosely over a nut or bolt, swing the handle, and the jaws automatically tighten. To loosen a nut, you flip the wrench over and swing the handle in the opposite direction. Three wrench sizes are available to handle work from 3/16″ to 1 9/16″.

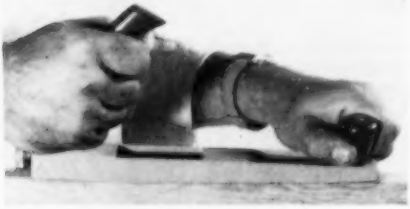


3. Computer Figures Compound Angles. By rotating a disk and reading settings that automatically appear in two windows on this computer, you can easily get the angles for cutting compound joints in one pass. It provides all the angles for cutting shadow-box frames and straight or tapered boxes having up to eight sides. For example, if you want to make a four-sided box with sides tapered 10°, you (1) set the computer so the number of sides lines up with the work angle; (2) set the miter gauge to the angle given in the Miter Angle window; (3) tilt the blade to the angle given in the Tilt Angle window; (4) cut.

Please turn the page for more new tools

More New Tools

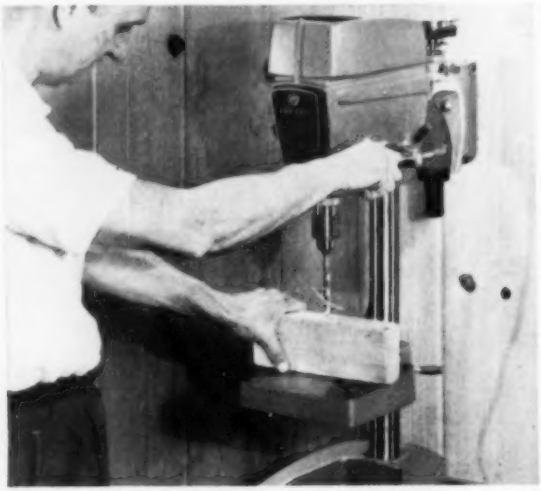
4. Handle Triggers Aerosol Bombs. You get better control of direction and spraying pattern with this pistol-grip handle that turns any pressure can into a spray gun. It instantly snaps in place on the cans and its sensitive trigger depresses the can's valve for light or heavy spraying.



5. Handle Makes Plane a File. You handle this tool like a plane (above) when its handle is mounted vertically. Loosen a screw, swing the handle around (see below), and you have an in-line grip for filing. The expanded-metal blade smooths wood and steel, and hardened cutting edges are said to pass over nails and screws without being damaged. Blades are reversible.

More information *about the new tools shown on these pages can be obtained from: 1. R. C. S. Tool Corp., Box 661, Bloomington, Ill., 2. Foreign Trade Development Corp., 350 Fifth Ave., NYC 1; 3. Miterite, 1439 Patio Drive, Campbell, Calif.; 4. Industrial Finishing Products, Inc., 465 Logan Street, Brooklyn 8, N.Y.; 5. Millers Falls Co., Greenfield, Mass.*

BANDSAW cuts stock up to 4" thick; has 9" work area between blade and frame. One-piece plastic blade cover simplifies change-over when switching from wood-cutting to metal-cutting blades. This outfit costs about $62.50.



DRILL PRESS has a cam motor mount for quick speed change and belt tensioning. Drilling depth is set by dialing a depth indicator. The head swings 360° on a safety support for drilling large work. Cost: about $65.

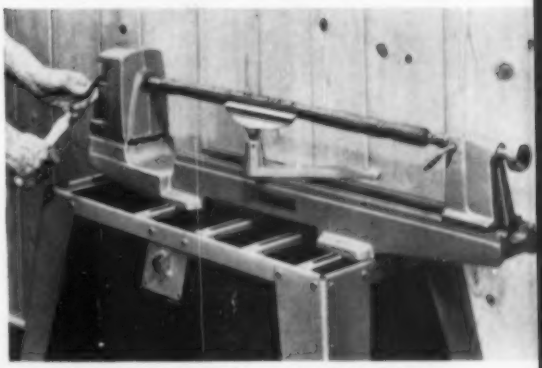
New Power Tools Are Styled for the Home

THE tools you'll see in the stores this fall would be attractive even in a recreation room or den. That's because makers are designing good looks into their tools. The latest to do so include Montgomery Ward & Co., and Delta Power Tool Division, Rockwell Mfg. Co.

Montgomery Ward engaged designer Robert Howey to style the new Power Kraft tools, then chose Magna Power Tool Corp. to manufacture them.

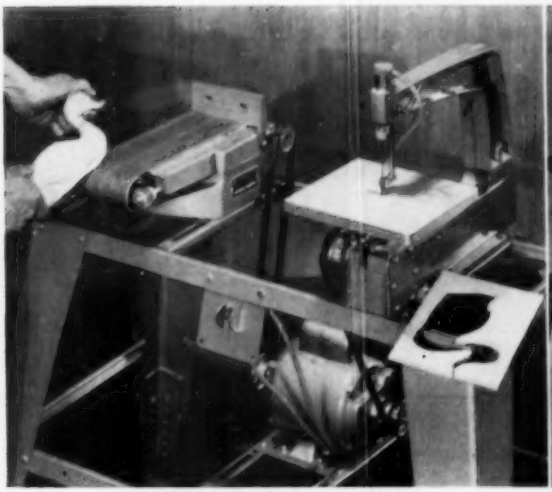
Industrial designer Raymond Loewy restyled the Delta Homecraft line in a new stainproof, mottled-gray finish. Four of the restyled tools—bandsaw, drill press, wood lathe and scroll saw—are shown on the following page.

Prices quoted here for the tools are approximate—*without* motor or stand.

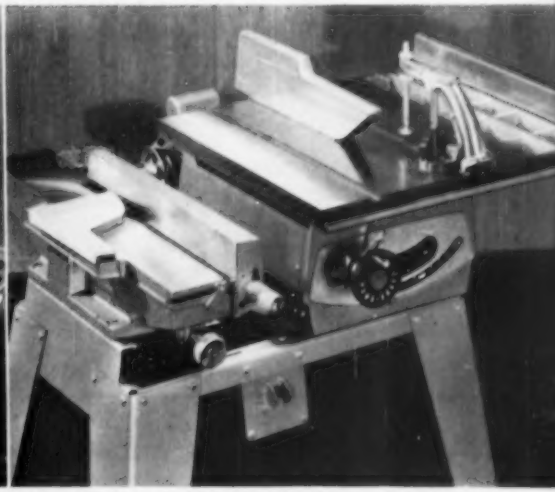


WOOD-TURNING LATHE has a built-in grinder for sharpening turning chisels. The tool handles work up to 9" in diameter and 30" long. A depression in the bed clears short turnings to 12" in diameter. Price: about $44.

MONTGOMERY WARD: *Today's tools must NOT look "as if they belong in a blacksmith shop," the company said in announcing the new ones shown here*

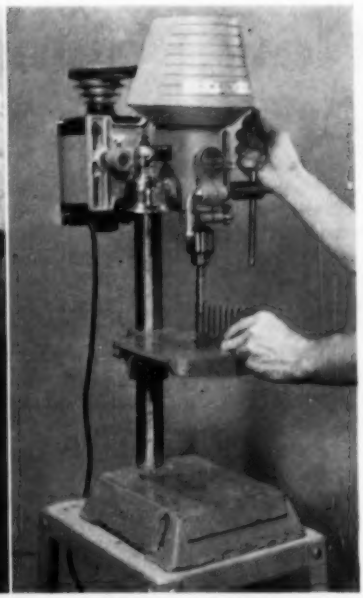


BELT SANDER AND JIGSAW can be mounted on a single table designed to drive both with one motor, or they can be used separately. The saw's overarm is removable for large work. Sander about $18; jigsaw about $22.50.



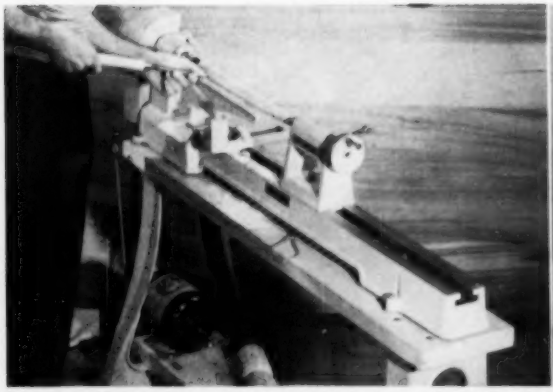
9" BENCH SAW AND 4" JOINTER combination sells for about $195. The saw is also available in 8" and 10" sizes and can be bought separately. A single knob controls blade height and tilt. A clamp-on miter gauge grips the work.

DELTA'S BANDSAW cuts stock up to 6" thick, and blade is 10" out from frame. The table tilts 45°, has a graduated scale. An abrasive belt can be installed in place of the blade to convert saw to a contour sander. A sliding guard covers all of the blade except the part that's cutting. A light illuminates the cut. Price: about $65.

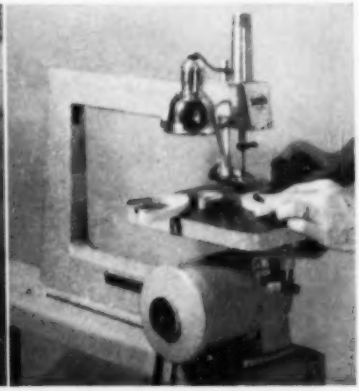


DRILL PRESS has four speeds, and pulleys are dynamically balanced to prevent vibration. Tool can be used separately or with a special base that fits the Deltashop—Delta's combination. Tool shown, about $70.

DELTA *engineers feel that people want tools that look as slick as modern home appliances. Four restyled Delta power tools are seen on this page*



THIS WOOD-TURNING LATHE is said to have the largest capacity ever built into a home-shop model. It will turn large pieces such as bowls up to 14" in diameter over a deep gap in the bed. Work 36" long and 11" in diameter can be turned over the bed itself. The headstock has a device for indexing. Price: about $80.



SCROLL SAW cuts internal and external curves in wood up to 2" thick, or light metal. A blower clears sawdust from the cutting line. Lower blade-chuck takes sanding sleeves and machine files for fine finishing. About $50.

New Router Has Economy Price Tag

A NEW router brings good news to economy-minded woodworkers—its $39.95 price tag. Made by the Millers Falls Co., Greenfield, Mass., the router is at least 10 dollars cheaper than any on the market, yet it has the capacity and power to handle just about any routing job.

For $39.95 you get the basic tool, consisting of the 30,000-r.p.m. power unit, chuck, two wrenches and the router base. You buy the router bits, selecting them according to your needs from a wide assortment. To extend the router's usefulness, you can add the following attachments as you need them:

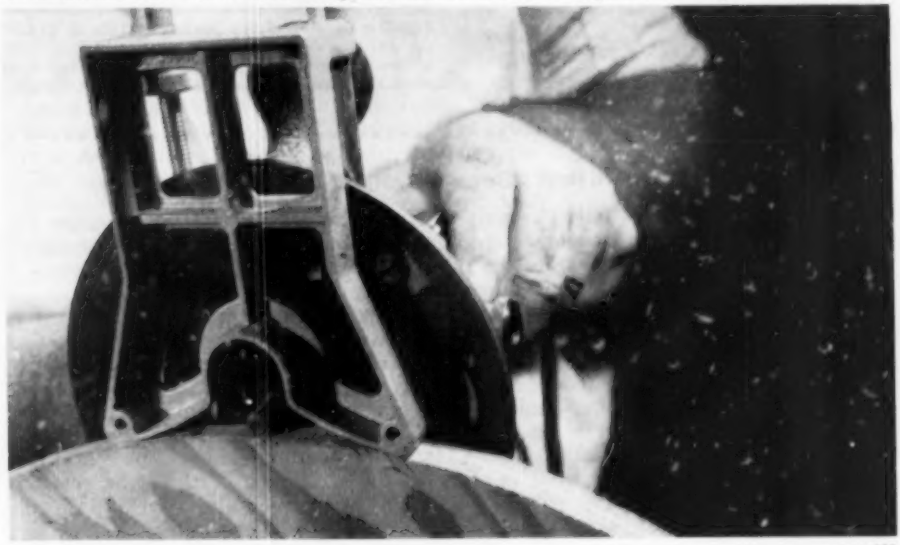
A clip-on scale priced at 75¢ divides each full turn of the helically grooved power unit into 64ths of an inch for fine depth-of-cut adjustments.

A routing guide at $3.25 is used for grooving or for shaping along straight or circular edges. A knurled adjusting nut provides micrometer adjustment.

A trammel point at $2.50 can be used to

ROUTING WITH A TEMPLATE makes the duplicating of intricate inlay grooves an easy job. Template guides are interchangeable with those of other router manufacturers.

An underside view shows how the guide follows a curved edge for making decorative cuts.



The plane attachment has a long 14″ shoe, planes to 45° bevel. Adjustments are calibrated.

swing the router for cutting circular grooves.

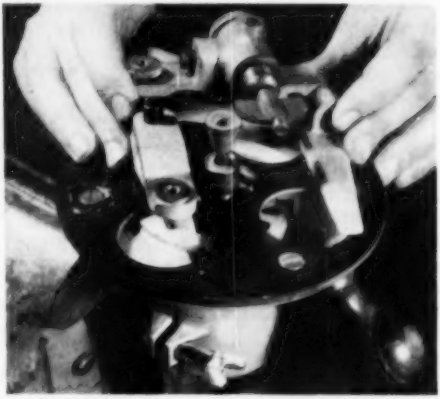
An edge-trimmer guide at $2.95 permits "off-hand" bevel cuts on edges.

Template guides in four sizes at $2.25 each are used with the router to follow patterns for duplicate or intricate work.

Fabricators of counter tops and laminate-covered furniture will find that a special laminate trimmer base ($12.50) and carbide-tipped trimming bit ($8.95) put the tool in the professional class.

For $31.95 you can add a complete plane attachment set to the power unit for fast, effortless planing—up to 1/8″ in a single pass. It features an outboard arbor support and a helical cutter to eliminate chatter.

A large shaper table of 1″ marine plywood can be added for $19.95.



ROUTER SHARPENS ITS OWN CUTTERS: A $14.50 jig holds cutters for accurate grinding with a cup grinding wheel. Click stops flip bits one-half turn to sharpen both sides equally.

Light Automatically Adjusts Lens Opening of Movie Camera

ENERGY from the light you photograph by, changes the lens opening on a new 8-mm. movie camera. A photocell converts the light to electrical energy, which activates a rotating-coil voltmeter. No batteries are needed.

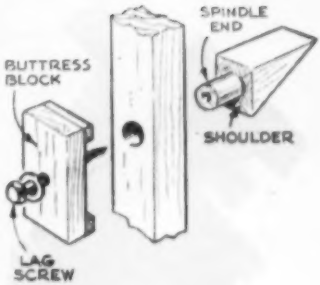
A gear attached to the meter coil meshes with two iris gears. As the coil moves around a fixed, solid core—in proportion to the energy received—the meter gear turns the other two, changing the lens aperture.

Taking movies with the fixed-focus, single-speed Bell & Howell is simple: Point it and press the shutter lever. If the sun sneaks behind a cloud, the opening changes automatically. A black spot appears in the viewfinder if the light gets too dim. The control works only with color film (ASA 10 or 16) but you can over-ride it manually for faster films.

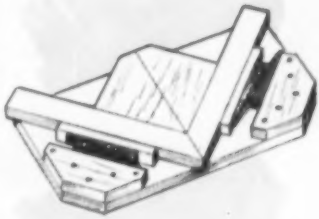
The POPULAR SCIENCE Shop Notebook

Use dry-cleaning fluid to renovate a wood rasp when its teeth become so solidly filled with a mixture of pitch and wood particles that ordinary methods won't work. Apply the fluid with a paint brush and let stand a minute or two. Then work out the softened accumulation of residue with a succession of cross strokes of a file card or a wire-bristled brush.—*Walter E. Burton, Akron, Ohio.*

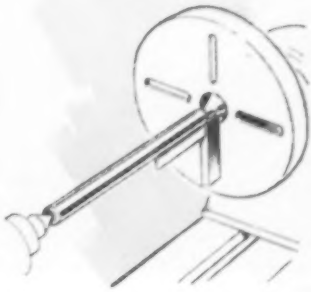
Convenient soldering-iron cleaner is a piece of abrasive cloth tacked to one corner of a workbench. Wipe the tip of the hot iron across the abrasive occasionally while you are soldering. This will help keep the hot surface free of scale, and smoothly tinned.—*John A. Comstock, Wellsboro, Pa.*



A buttress block and a lag screw will hold hard-to-clamp spindle joints firm until the glue sets. The buttress block should have two legs which straddle the joint, to prevent squeezed-out glue from bonding the block to the work. Drill a pilot hole in the spindle-end before arranging the assembly as shown (drawing, right) and driving home the lag screw.—*J. C. Roby, San Diego, Calif.*

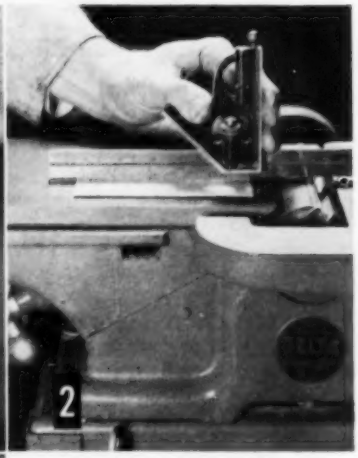


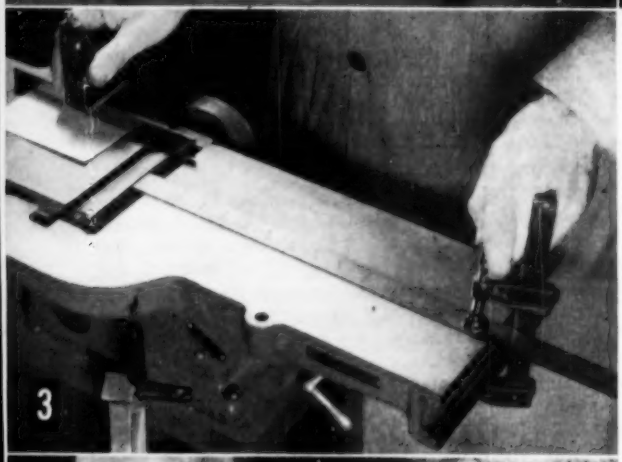
Quick-locking miter clamp is easily made from ¾″ plywood and a pair of printer's quoins. These are ramp-shaped metal wedges that are spread apart with a key to lock type in place, and can be bought at printing-supply houses. Four triangular blocks screwed to a square base form the clamping frame. Set the two inside blocks just far enough apart to take a saw blade. To operate, insert the miter pieces between the blocks, back their outside edges with wood pads, and exert pressure with the quoins placed between the pads and the outer blocks. If miter cuts aren't true, re-saw them, with the rear of the saw blade riding in the slot between the inner blocks.—*Harold C. Kimball, Salt Lake City, Utah.*



Here's how to check lathe alignment and square accuracy with one test. Place the lathe's faceplate on the spindle, and mount an 8″ rod between the centers. Take a full truing cut and measure the rod's diameter at both ends. If the rod is *larger* at the tailstock, the tailstock is off centerline toward the *back* of the lathe. If it is *smaller* at the tailstock, it is off center toward the *front*. Adjust the tailstock until you get a cut that produces no taper. Then test your square by holding its body against the faceplate, which must be clean and smooth. If light shows between the blade and the rod, the tool is out of square.—*J. Randolph Lucas, Roanoke, Va.*

The POPULAR SCIENCE Shop Notebook





Sharpen a jointer this way: First, disconnect the power supply (don't rely on the switch; play safe and *pull the plug*). Remove the guard and fence. With a 1/4" dowel, clean out any pitch and dirt that may be embedded in the knife lock bar ahead of the blades, as in (1). Using a steel rule with a thin piece of cardboard under it as a gauge, turn the cutterhead and lower the rear table until the rule just lies on the flats of the beveled blade edges—see (2). With the gauge still in place, clamp another steel rule to the front table so that it locks the cutterhead in this location when the free end of the rule is flush with the table. This way it will act as a ratchet, springing up each time the cutterhead is backed to the next blade, as in (3). Wrap another strip of cardboard of the same thickness as the one used for the gauge around one end of a fine carborundum stone, to protect the rear table. Apply a few drops of oil and hone each blade, stroking straight across it, as shown in the photograph (4).—*Glenn A. Wagner, Delmar, N. Y.*

First Aid for Your Car Horn

If it honks when it shouldn't, doesn't when it should, or just sounds sour, here are the fixes

By Phil McCafferty

Police in a Midwest city are still looking for a motorist who, irked by a blaring horn behind him, halted his car in the middle of five-o'clock traffic recently. Walking back, he calmly lifted the hood of the car behind and ripped out the horn wiring. Slamming down the hood, he told the surprised young lady behind the wheel:

"There! I fixed that horn. It won't honk now!"

Then he returned to his own car and disappeared in the traffic.

RIPPING out the wiring is a legitimate and logical fix if you're ever caught in the embarrassing situation where your horn won't stop blowing. In actual practice, however, you'd do better to loosen the hot wire from the relay terminal.

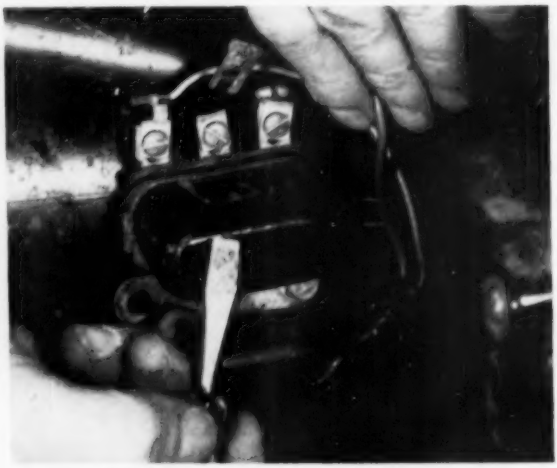
There are other points, too, that it'll pay you to know about the horn system of your car.

Because horns draw "juice" and quite a bit of it, pressing your horn button only supplies a ground to the winding of a horn relay coil. The relay contacts, closed by the energized coil, supply the horns with current. This clever gimmick makes the wire to the horn button carry only the comparatively small amount of current required to operate the relay.

(This year's Plymouth and Dodge cars are different, however. Arcing at the contacts is much less

"I COULD TELL YOU how to fix this horn, Pop, but I think it'll be more educational if you do it yourself."

What to do when a horn sticks



1 QUICKEST WAY TO SILENCE IT is to remove the hot wire from the relay terminal. This is usually the center terminal, sometimes marked "B." The wire is often colored red.

or

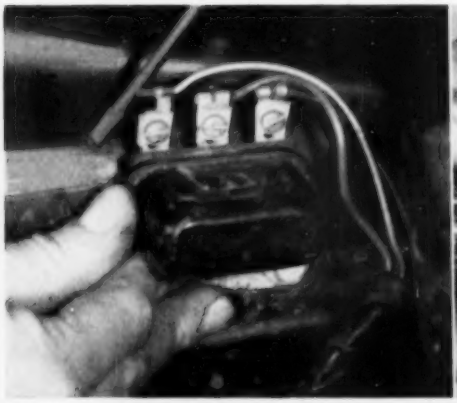
2 RAPPING THE RELAY CASE with a screwdriver handle may free the contacts of a stuck relay. On some '57 models, the wires have plug-in connectors that can be yanked loose.

in 12-volt electrical systems and is not considered a problem, so the '57 models have no horn relay. The horn ring does the job and a heavier wire completes the circuit from ring to horn.)

If a horn won't stop honking when you release the button, chances are the relay contacts are stuck in the closed position. A sharp rap may help open them.

If your horn honks unexpectedly, the wire is probably grounded somewhere between the horn button and relay. On many cars this wire goes through a hollow steering tube up to the horn button. If for any reason the wire binds or rubs, the bared wire may ground out. Horns that

Checking and fixing the horn relay



YOU CAN TEST THE RELAY quickly by grounding the "S" terminal—the one connected to the horn button. If the horn blows or you hear a click inside the case, the relay is okay.

PRY OFF THE RELAY COVER and check the condition of the contacts. Burned or pitted contacts sometimes stick when closed, or limit the current flowing to the horn.

How a typical horn system works

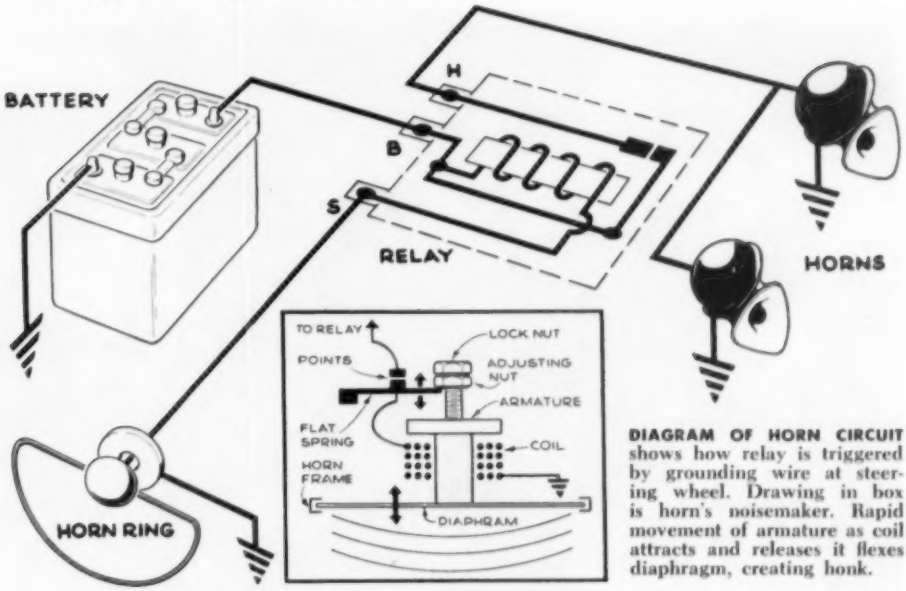


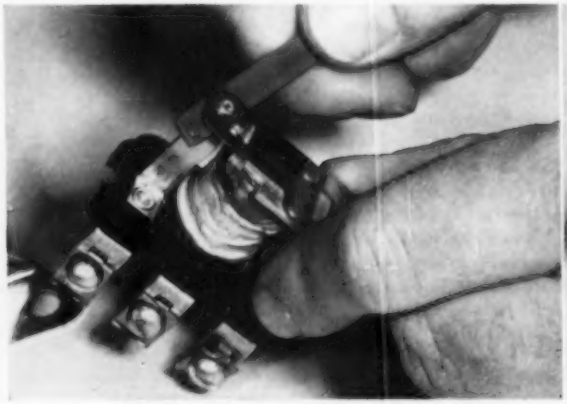
DIAGRAM OF HORN CIRCUIT shows how relay is triggered by grounding wire at steering wheel. Drawing in box is horn's noisemaker. Rapid movement of armature as coil attracts and releases it flexes diaphragm, creating honk.

blow when the steering wheel is turned are prime examples.

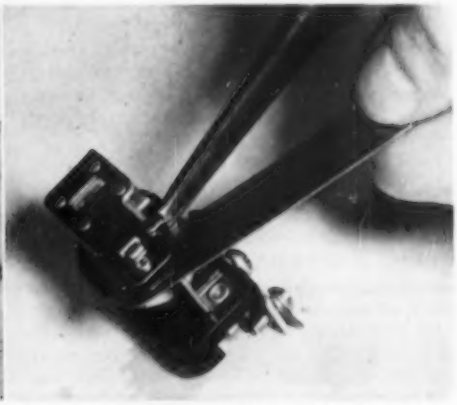
You can spot the hollow steering-tube setup by looking for the horn-blowing wire that comes out the front end of the steering gearbox.

In the other system, the wire from the relay is loomed into the turning-signal wiring harness that enters the steering-shaft housing under the dash. Fortunately, since replacement is a major undertaking, this portion of the wiring seldom gives trouble.

On this system, the wire ends at a circular ring beneath the steering wheel. A short spring-loaded wire turns with the



FILE THE CONTACTS clean and smooth with a distributor-point file. In most cases it will be necessary to open the gap slightly in order to get the file between the contacts.



BEND THE SPACING ARM to hold the gap at about 1/32" open after filing the contacts. Press the cover in place and seal the edges with ignition lacquer or nail polish.

TO GET AT THE HORN-BUTTON CONTACTS, the horn ring must be removed (see text). Prying off the ornamental cap gains entry to the insulated horn ring screws (in hand) above. Removal of these screws frees the horn ring, exposing the contacts beneath it.

COLLECTOR RING WITH BRUSH CONTACT is typical where the horn wire enters the steering column at the dash instead of running *through* it. This system seldom gives wire trouble because the wire remains stationary and doesn't twist with each turn of the wheel.

steering wheel to make constant contact.

When it won't honk or gives an intermittent "beep" it is pretty safe to guess that something isn't grounding properly.

Remove the horn button and lay a screwdriver blade across the protruding wire end and the closest ground. If this sounds the horn, look for a dirty button contact or a weak spring failing to hold the wire end in position for contact with the button.

If grounding the wire end failed to sound the horn, suspect the wire itself. Grounding the relay terminal to which the steering-column wire is connected will tell if the wire is okay. If grounding the relay terminal blows the horn the steering-column wire is probably broken.

If you aren't certain how your particular button or horn ring can be removed, try this sequence:

Look for screws on the underside of the steering wheel that hold the piece in place.

No? Then check for a horn-ring cover or ornament that snaps or pries off, exposing screws that hold the ring or a button flange.

No again? Firmly press down upon the button or ring and twist to remove.

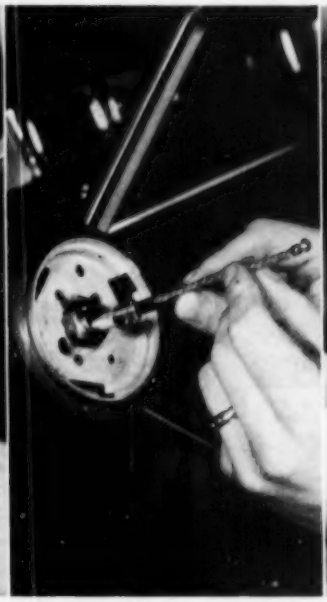
The relay is also checked by this test. As the relay terminal is grounded, if the relay only "clicks," the trouble lies between relay and horns. If the relay doesn't click, and there is power from the battery to the relay, probably there is an "open" in the tiny relay-coil winding.

The horns themselves can be checked out by hooking direct to the battery. However, they seldom fail.

Horn sound can be changed by trial-and-error movement of the one or two adjusting nuts—usually found under the cap on top of the horn.

The adjustment is over a narrow range, and while it has some effect on pitch, it has little control over loudness. What you're actually doing when you make adjustments is varying the distance over which the diaphragm can vibrate.

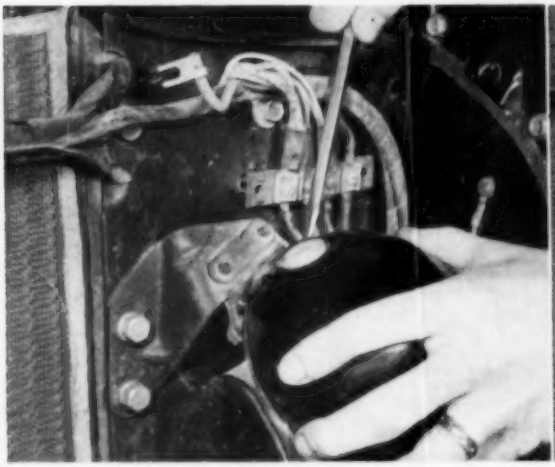
SIMPLER SYSTEM has horn ring held in place by locking lugs. Remove it by pressing ring evenly downward and turning it—usually counterclockwise. A spring will push ring out of hub.



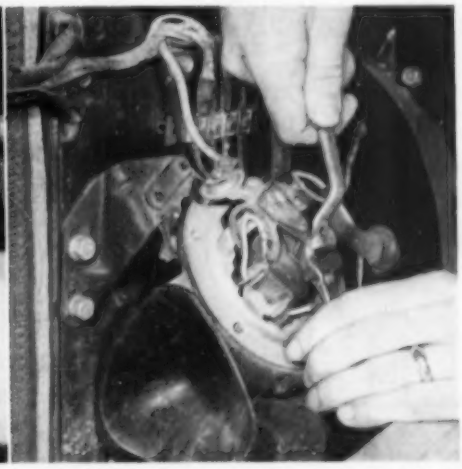
METAL KNOB on the end of this horn wire makes contact with a plate in the horn ring's center when the ring is depressed. You remove a bad wire by pulling it out of the column.

REPLACEMENT WIRE of the right size and length, with correct fittings attached, can be obtained at a car dealer's parts department. The one shown here plugs into wire leading to relay.

How to tune a sour-sounding horn

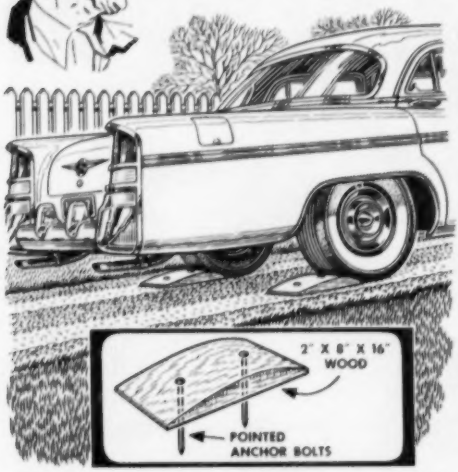


PRY OFF THE DOME-SHAPED CAP or remove a screw in its center to get at the horn's innards. Tune parallel-connected horns separately, temporarily disconnecting whichever horn you're not working on at the moment.

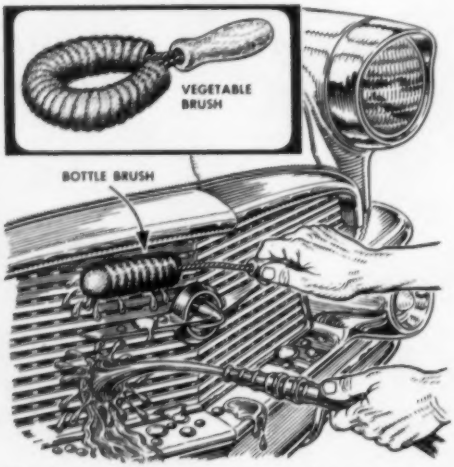


TURN THE ADJUSTING NUT just about 1/16 of a turn and then try the horn for the sound you want. If there's a locknut, tighten it snugly to keep the adjusting nut from vibrating loose each time the horn is sounded. END

Hints from the Model Garage



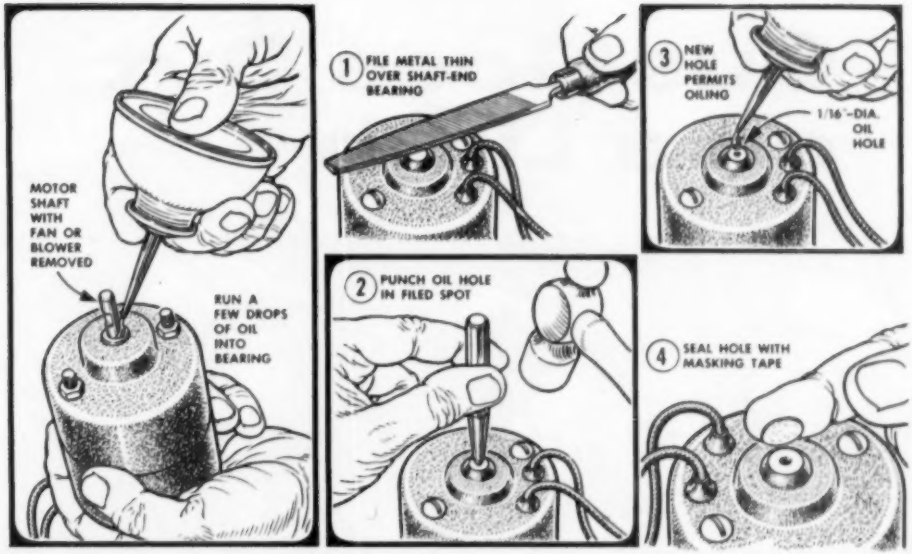
A pair of rounded wood blocks anchored to a sloping driveway will keep a car from rolling away. The blocks should be gently rounded so they are easy to run over, yet at the same time just steep enough to hold the car when it is parked.



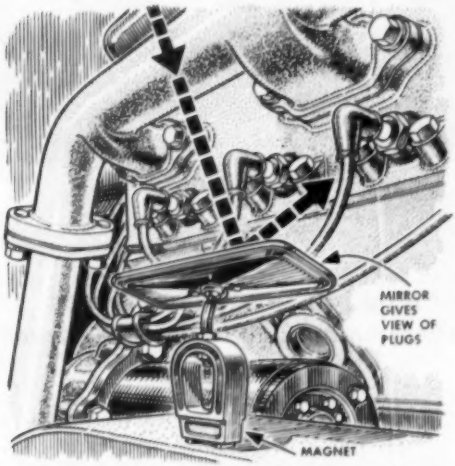
Need a handy tool for cleaning the elaborate grille on a modern car? Find a vegetable or bottle brush in the kitchen, and you can reach in and clean *all* the chrome, where a cloth or a sponge would get at and clean only the surface.

A hose attached to a funnel will help get automatic-transmission fluid to a filler tube that is close to the car's firewall. Use hose that will fit *in* the filler tube and slip it over the funnel's neck. A cotter pin will hold the hose in place.

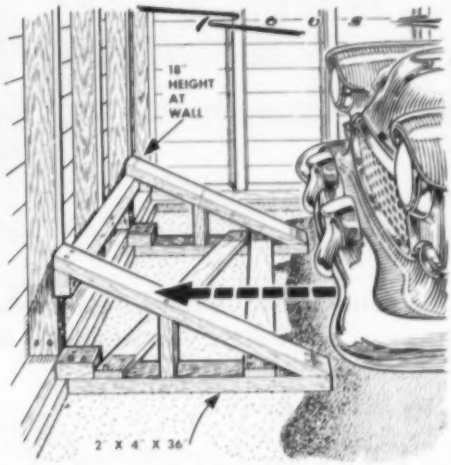
A few tin cans of different diameters make an effective highway warning. Nested, they take little space in the trunk. Wrap with reflecting tape for night, and stow small red flags in the smallest for daylight emergencies.



Small heater and electric-wiper motors are often neglected because they must be taken apart to be oiled. A drop in efficiency results. Simplify the problem by providing an oil hole in the sealed housing-end. File the metal thin but not through, then punch a small hole directly over the shaft. Light oil can be fed to the rear bearing through this hole, and the hole sealed against dust with a disk of masking tape. Oil can be trickled down the shaft to the front bearing.

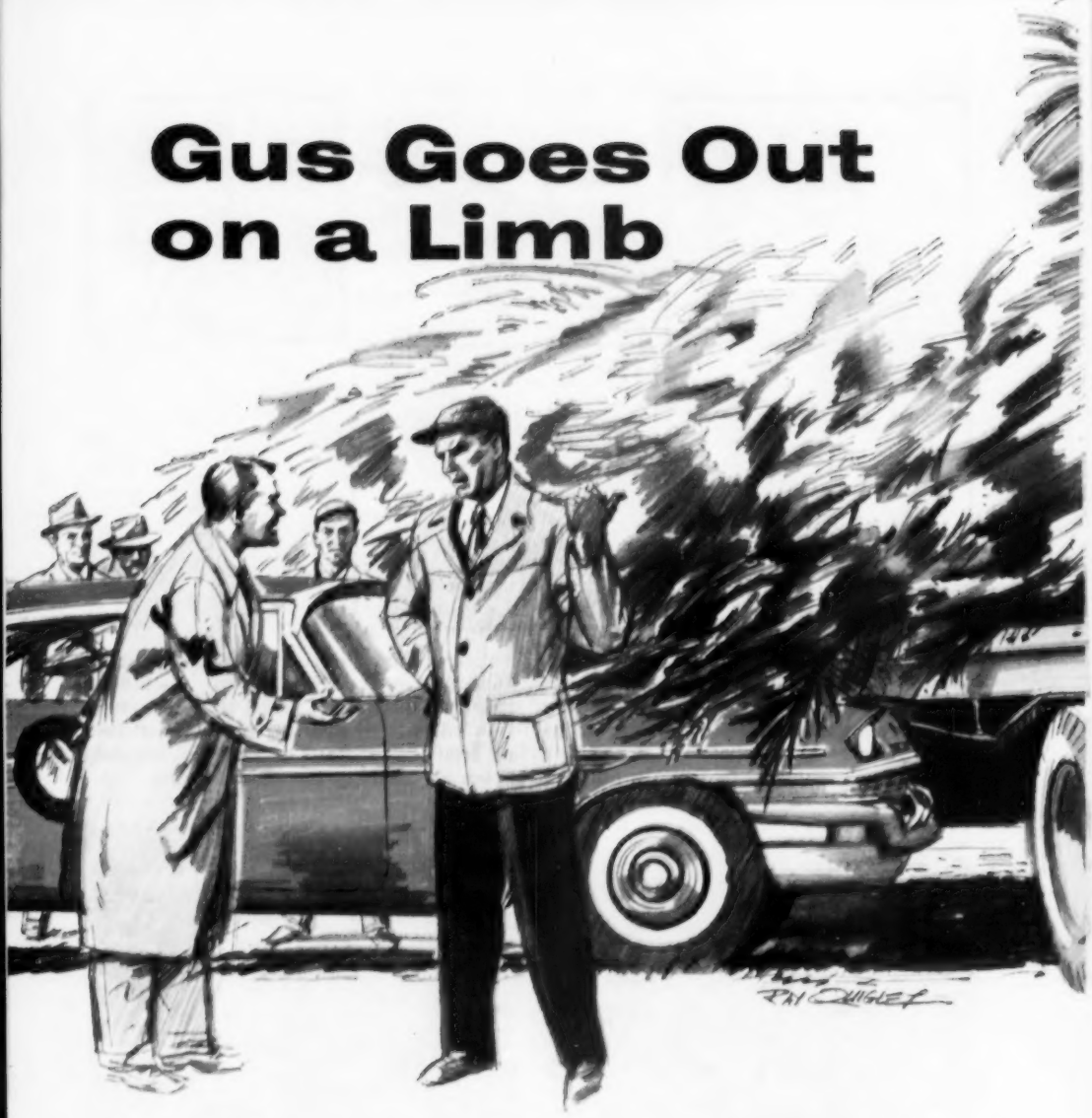


To help you see beneath the manifolds when installing plugs in new V-8s, fasten an old rear-view mirror to a husky magnet. Place it on the frame with the mirror aimed at the plug openings and you can work without feeling your way.



A tapered car-stop of two-by-fours built against the garage wall serves a double purpose: It prevents accidentally ramming the wall; and as the bumper rides up on it, the car's weight is off the front springs, postponing front-end sag.

Gus Goes Out on a Limb



In suburban Meadowville any plant bigger than a rose bush was an oddity. How had Bert Hibbard managed to run into a tree?

By Martin Bunn

THE Model Garage had just opened its doors for business when Bert Hibbard telephoned excitedly from Meadowville.

"Get out here fast, Gus," he pleaded. "My car's stuck under a tree, in front of my garage. I'll be late to my office."

"Under a *tree*?" Gus asked, astonished.

Gus knew there wasn't a shrub in Meadowville bigger than a rose bush or lilac. In fact, every house in Meadowville had exactly three roses and two lilacs—what the contractors had supplied.

"A tree!" Gus repeated. "Are you feeling all right, Bert?"

"How could I feel all right?" Hibbard snapped. "I can't get to my office and neither can Orville Bullow. This tree

When Gus arrived in Meadowville, the place was jumping like a beehive in spring.

has us both cornered. If I'd known that Mike Regan was going to buy a house on the same street I'd never . . ."

Hibbard's voice ceased, to be replaced in the receiver by what seemed to Gus to be several voices raised in heated discussion. Gus hung up and jumped into his service truck. Stan Hicks, Gus's helper, came to the cab.

"What's up, Gus?" he asked.

"Maybe I'm crazy, Stan," Gus said, "but a tree seems to have cornered a couple of fellows in Meadowville."

"Tree!" Stan Hicks said hollowly, as Gus drove out. "In Meadowville?"

MEADOWVILLE, when Gus arrived, was jumping like a beehive in spring. The morning exodus of suburbanites was in progress. Up and down the

long, neat rows of houses, men were gulping morning coffee, rushing to cars to get to work. As Gus pulled up before Bert Hibbard's place an astonishing sight met his eyes. A truck with a long, flat-bed trailer behind it was stalled before the Hibbard home. On the truck and trailer rested an ornamental evergreen tree that appeared to be all of 30 feet in length.

It was about a foot thick at the butt, the roots encased in earth, which was retained about them by a wrapping of burlap sacking, creating a dirt ball that must have weighed easily two tons. Bert Hibbard's late-model sedan had its snout buried under the tree and the trailer bed, just ahead of the rear wheels.

GATHERED about the scene of the collision were Bert Hibbard; his next-door neighbor, Orville Bullow; Mike Regan; Al Roper, the truck driver; and his helper, Tom Clark. Gus pulled up against the opposite curb and walked over.

"Hibbard must have been stone blind, Gus," Al Roper announced. "He came shooting out of his driveway and banged right into my truck."

"Truck!" Hibbard retorted. "I saw the truck all right, when it came around the corner. I didn't expect you to have Sherwood Forest trailing along behind it. This is a residential street, Roper, not a logging camp."

Mike Regan's blue eyes glittered with fury. "Just because I happen to want a bush on my lawn, Hibbard, is no reason that you have to rush out and sabotage the operation."

"Bush?" Orville Bullow protested. "That thing is so long that it blocks my driveway and Hibbard's too. If it's a bush, I'm a beagle."

Mike Regan's eyes moved over Bullow's squat figure. "The resemblance," he remarked, "is quite obvious."

Hibbard said angrily, "How do you propose that Bullow and I get to work?"

"Don't ask me," Regan said, shrugging his shoulders. "After all, Hibbard, you ran into my tree."

"I was late," Hibbard said. "I came down my driveway like I always do. I saw the truck, and then before I knew it I was under this monstrosity you had hauled in here."

"This isn't getting you fellows off to work," Gus cut in. "Now let's see how we're going to clear this tangle. Maybe you can back your car out, Hibbard, if we get our shoulders under the tree limbs and lift it off the hood."

"Not a chance," Hibbard said. "My motor won't start. That's why I called you."

Gus tried the motor, and got no response. With the hood of the car under the tree, he couldn't get at the motor, either, to discover what was wrong. And, since the car was still in Hibbard's driveway, Gus couldn't get behind it with his tow truck to tow it back. It was wedged too firmly under the trailer to be pushed back by manpower, and the truck could not be moved, either forward or back, without extending the damage to Hibbard's trapped car.

"All you have to do, Gus," Hibbard said, "is to hook on to the back end of the trailer and pull it sideways off my car."

"Not that easy," Gus said. "I haven't got enough traction or power to slide the four rear tires of that trailer around on this rough cement with my truck—not with the load they're carrying."

Bullow inquired gloomily, "Well, what are we going to do then—call in a couple of Army tanks?"

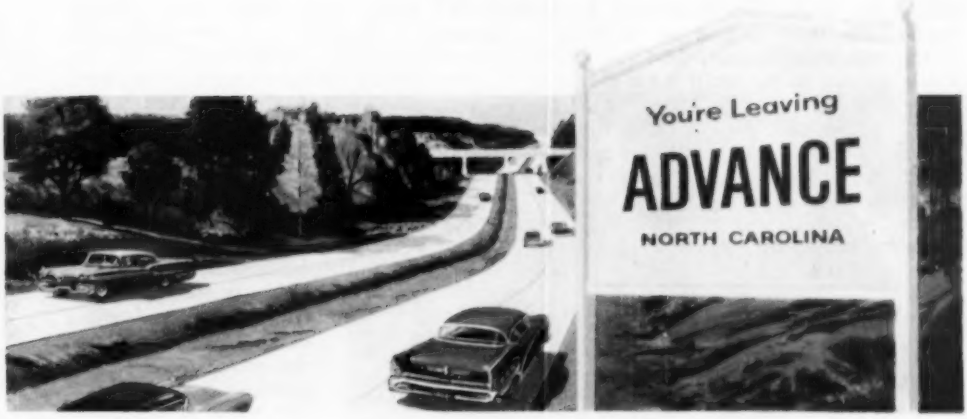
LIGHTING his pipe thoughtfully, Gus walked around the car and truck, studying the situation. Passing the open door of Hibbard's garage he noticed a piece of sheet-metal on the floor, placed there, no doubt, to keep grease drippings from the cement. The sheet was about four feet long by three wide.

"You wouldn't have another piece of this around, would you, Bert?" he inquired.

"Why ask foolish questions?" Mike Regan said disgustedly. "On this street what one man has, so has the other—three roses, two lilacs, one drip pan in his garage. You'll find one of those, Gus, in every garage down the street."

"Fine," Gus said. "In that case, Regan, how about borrowing yours?"

GUS got a can of heavy grease from his truck and smeared it over the two sheets of galvanized steel. Using heavy hydraulic jacks that he always carried in the service truck, he managed to get



FROM

Advance to Cash

652 MILES—32¢

For less than 1/20th of a cent a mile, a new AC Oil Filter keeps oil clean, protects your engine!

If you're an average driver, you'll travel over 15 times the distance from Advance to Cash – a total of 10,000 miles each year! And you'll probably encounter the same types of driving from town traffic to country cruising . . . the same types of weather from hot to cold, from fair to foul . . . the same types of terrain from winding hills to level straightaways. The engine of your car will be subjected to all driving conditions.

That's why it's so important to give your engine the added protection of a new AC Oil Filter every 5,000 miles! An AC Oil Filter cleans all of the oil in the engine every 30 seconds at normal speeds . . . protects the precision parts from dirt, dust, grit and bits of metal as small as 1/100,000th of an inch.

The next time you change the oil in your engine – change to a new AC Oil Filter, too. Your nearby AC dealer will tell you how little it costs . . . how much it does for your engine!

Watch Walt Disney Studios' ZORRO every week on ABC-TV

CHANGE OIL AND FILTER, TOO!

AC THE ELECTRONICS DIVISION OF GENERAL MOTORS

GM
FORWARD FROM FIFTY

the sheets under the rear tires of the trailer. He then hooked on to the rear of the trailer and maneuvered the service truck around so he could get a side pull by nosing up into the driveway of the house across the street. With the tow car in compound low the trailer end was skidded sideways quite easily, sliding on the greased steel. Hibbard's car was free. The truck, which was undamaged by the collision, pulled up the street and began backing into Regan's yard, where a huge hole had been dug to receive the tree.

"Now we can get your hood up, Hibbard," Gus said, "and see why your engine won't start."

The low hood of the car had been punched down in the middle by the collision, but Gus was able to get it open. He found that the huge air cleaner on the carburetor, which barely cleared the hood when it was closed, had been jammed down on the carburetor air horn to such an extent that it had bent the throttle rod, locking it in such a tightly closed position that the motor could not get even idling gas.

Gus straightened the rod, set up the idling screw a bit. The motor started immediately now. Gus adjusted the idle and managed to push up the downward bend in the hood enough so that it would close properly.

"My insurance company will settle the bill, Gus," Hibbard said as he got into the car. "But probably they'll cancel my policy if they find out I'm living on the same street with that crazy Regan. Imagine a man having a tree of that size hauled into this community."

Gus moved his eyes over the long rows of almost identical houses, a contractor's delight. Here every man was master of the destiny of his home—perhaps for the first time. Most of these people had come here from rented apartments, with landlords to limit their freedom of expression. Each house here, then, was the beginning of the fulfillment of a dream, but only the beginning. Gus wondered how long Mike Regan had been dreaming of his own lawn with a big shade tree to sit under.

"Is this the one that's stuck, Helen?"

"You know, Hibbard," Gus said reflectively, "with Mike it was a tree. With you and the others it might be a glass hothouse, flowers, a hurricane fence, maybe nothing more than a dog kennel. These homes only look the same now because each family hasn't had time yet to work out its own ideas. Regan, with his tree, just started what you'll all be doing in time."

Hibbard paused, "I never looked at it that way, Gus," he said. "Maybe you're right. My wife and I have ordered bricks and stuff to build a barbecue pit . . . Well, I'd better get to the office. Sliding that trailer around on greased skids was a neat trick. Thanks."

Driving back, Gus pondered. His solution had worked fine. Still he had a nagging question—couldn't he have managed it some other, simpler way?

At the Model Garage, he told Stan how he'd untangled Hibbard's car.

"Gee, Gus," Stan said, "that was a neat trick."

Stan was silent a moment. Then he added innocently, "But Gus, why didn't you take some air out of Hibbard's front tires? Wouldn't that have lowered the car enough to push it back?"

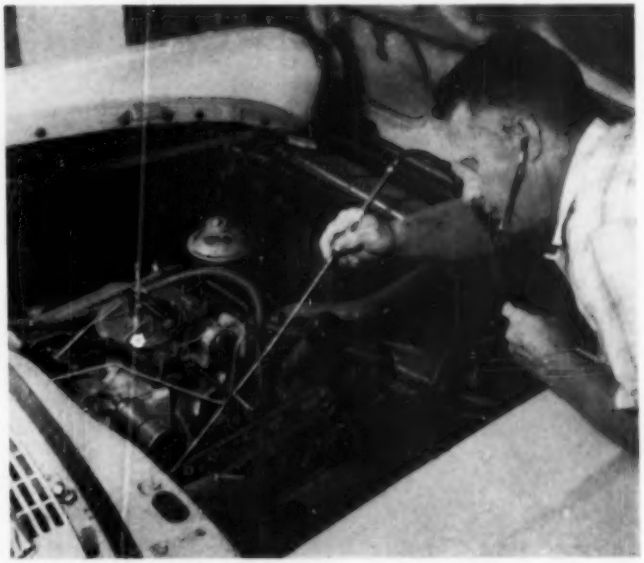
Gus clapped his hand to his forehead and let out a low groan. END

Next Month: Gus bails out a teen-ager.

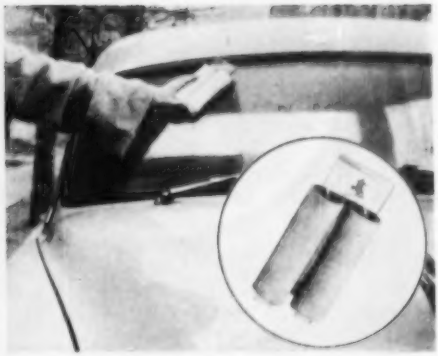
New for Your Car

1. A stethoscope for mechanics sorts out noises and helps medics in overalls diagnose ailments in mechanical equipment. A spring-steel diaphragm in the body amplifies sounds picked up by the probing needle.

With the earphones in place, you can quickly pinpoint and identify noises in the engine or body of a car. The stethoscope is said to be so sensitive that you can hear water running through a pipe and even tell which washer is leaking in a hot-and-cold mixer faucet.

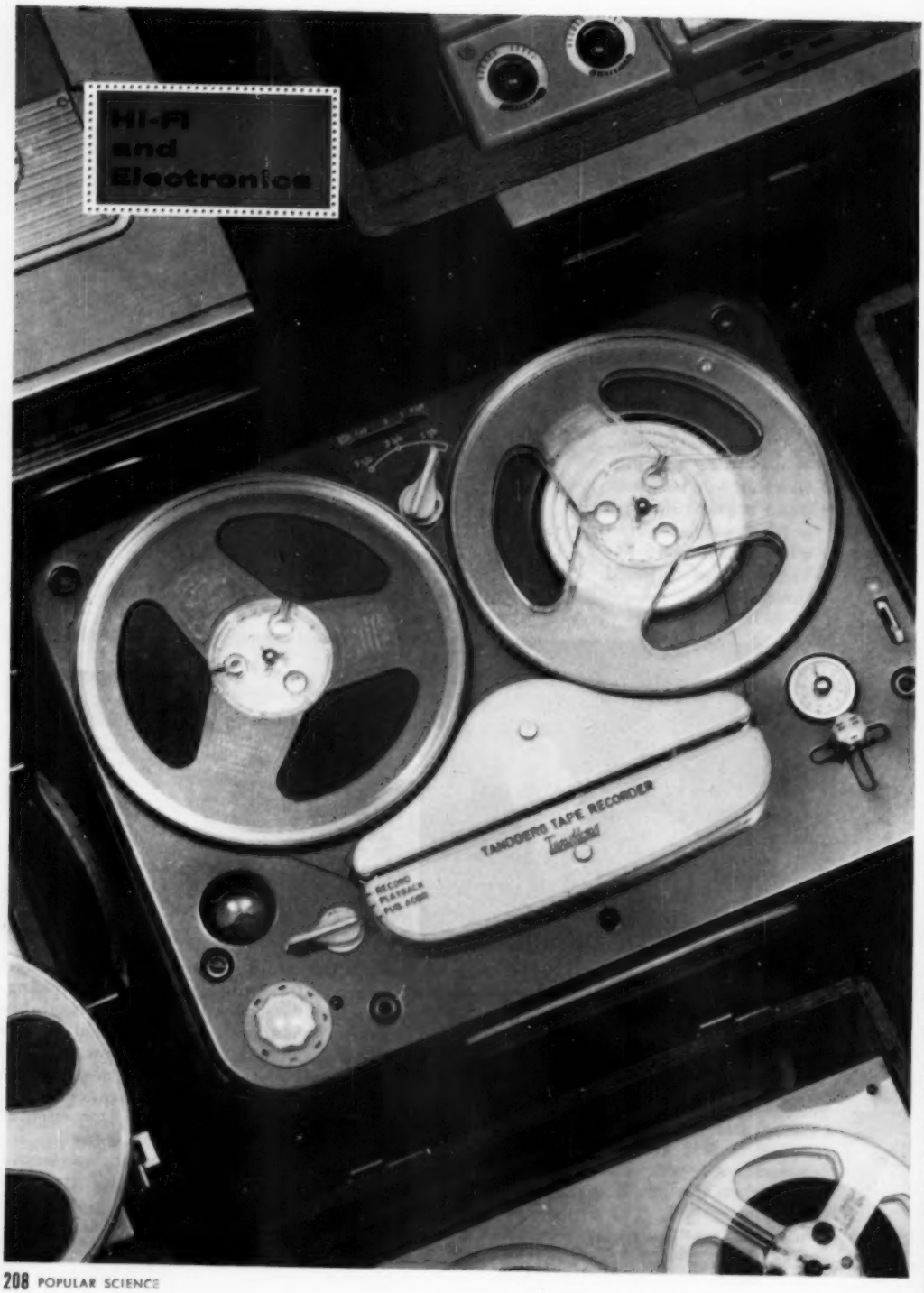


2. Pedal hold-down keeps a car running at a fast idle to warm up the engine on cold mornings. You can also use it to keep the car chugging at charging speed to pep up a weak battery. Clamped to the accelerator pedal, it does a better job than a stick propped between the pedal and the seat: Vibrations won't dislodge it and you can adjust it for the speed you want. It is not intended for use when the car is driven on the road.



3. Windshield roller cleans dirt and smudges from the glass with no wetting. A specially treated cloth stretched between two spools on a pronged holder forms a flat wiping pad. A few turns of the spools reels out a clean section and when all the roll is soiled, you can drop it in the washing machine. One edge of the holder is beveled for scraping ice from the windshield. It will also remove paint spatters from house windows.

More information *about the products shown on this page can be obtained from: 1. Rinck-McIlwaine, Inc., 16 Hudson St., New York City; 2. Badger Tool & Manufacturing Co., 1501 W. Polk St., Chicago 7, Ill.; 3. Industrial Wiping Cloth Co., Inc., 29-28 41st Ave., Long Island City 1, N.Y.*


Hi-Fi
and
Electronics
TANDBERG TAPE RECORDER
Tandberg

How to Buy a Good Tape Recorder

What will you record? Baby's gurgle? A symphony? Business letters? Before shopping, check your plans—and the facts here

By Robert Gorman

THE important questions you have to answer in shopping for a tape recorder are How Much? and How Good?

You'll find a wide choice under both headings. The chart on the next two pages gives manufacturers' specs for a sampling of current models in the under-$400 price class. It shows that even the least expensive machines do an acceptable job of recording and reproducing sound, while those in the top brackets come close to what audiophiles call the "ultimate" in high fidelity.

In between, you'll find a host of excellent all-purpose recorders; the ones that retail for $150 to $200 are the best sellers, and generally the best buys.

But at every price, machines differ in important qualities and operating features. How much they are worth to you depends to a great extent on who will use your machine, how, and for what. You'll find it easiest to pick a just-right model if you consider what a recorder is and how it works.

How a recorder works. Basically it is a device that harnesses electronics, magnetism and mechanics to print invisible sound tracks on ribbons of coated plastic. It does this by changing sound waves into electrical signals and passing the signals through the coil of an electromagnetic recording head. This sets up a rapidly varying field across the poles of the magnet. As a strip of tape moves past the gap, magnetic energy rearranges iron-oxide particles in the tape coating.

You can't see or feel this magnetic sound track, but you know it's there because you can play it back through a similar head (or the same one) wired to reverse the whole process.

Magnetic sound is as permanent—or as temporary—as you want it to be. You can play a recording thousands of times, or erase a track and put a new one in its place.

These bands of sound, incidentally, are extremely narrow, and all current home recorders are now dual-track machines. This means they make two entirely separate recordings along opposite edges of a ¼-inch-wide tape. Normally

Five important features to look for in a tape recorder

HERE are five of the characteristics that add up to top-notch performance in a tape recorder. Use these in checking through the table of manufacturers' specs on the following pages.

- *Broad Frequency Response.* A wider range of sound frequencies (in cycles per second) means higher fidelity. But look also for lower decibel (db.) variation for better response.
- *Low Flutter and Wow.* This is a sign of a good tape transport.
- *High Signal-to-Noise Ratio* ensures lower background hiss, cleaner recordings, better tape sound.
- *Adequate Power.* For built-in sound equal to that of a good phonograph (or for use in a large hall) a recorder should have six or more watts of output power. For ordinary use, two watts is ample.
- *Ease of Operation.* Foolproof interlocks, a tape counter and a reliable record-level indicator help you make—and keep—good recordings.

All the details about the new Tape Recorders

BRAND NAME	MODEL	APPROX PRICE	STYLE	APPROXIMATE WEIGHT (pounds)	APPROXIMATE DIMENSIONS (inches) H x W x D	TAPE SPEEDS (inches per second) 1⅞	3¾	7½	15	FREQUENCY RESPONSE (cycles) At 3¾ in./sec.	At 7½ in./sec.
AMPRO	758	$250[a]	portable	44	11 x 16 x 17		√	√		40-6,000±3db.	40-15,000±3db.
BELL AND HOWELL	775-G	$190	portable	38	10 x 15 x 16		√	√		70-5,000±5db.	50-13,000±4db
	730G-1	$270	portable	39	17 x 17 x 10		√	√		70-7,500±5db.	50-15,000±3db.
	300M	$300[b]	table	42	11 x 19 x 14		√	√		70-7,500±5db.	50-15,000±3db.
BELL SOUND	RT204	$180	portable	35	8 x 15 x 18		√	√		30-6,000±3db.	30-12,000±3db.
	BT76	$190	portable	35	9 x 17 x 15	√	√	√		30-5,000±3db. n.a. @ 1⅞"/sec.	30-10,000±3db.
EKOTAPE	270	$270[b]	portable	35	11 x 15 x 14		√	√		40-9,000±3db.	30-15,000±3db.
FEDERAL	FME	$160	portable	25	10 x 13 x 13		√	√		50-8,000±3db.	50-12,000±3db.
FERROGRAPH	3A/N	$380	portable	50	10 x 18 x 19		√	√		n.a.	50-10,000±2db.
MAGNECORD	N35B	$300	portable	40	12 x 16 x 14		√	√		50-5,000±2db.	50-10,000±2db.
PENTRON	NL-1	$110	portable	29	11 x 14 x 17		√	√		40-7,000±2db.	40-11,000±2db.
	NL-2	$150	portable	33	11 x 14 x 17		√	√		40-7,000±2db.	40-13,000±2db.
	NL-3	$190	portable	38	11 x 17 x 18		√	√		40-7,500±2db.	40-15,000±1.5db.
PHILCO	TR-100	$200	portable	32	10 x 16 x 15		√	√		40-7,000±4db.	40-12,000±3db.
RCA	7TR2	$160	portable	33	9 x 18 x 15		√	√		90-5,000	90- 8,000
	7TR3	$200	portable	36	9 x 18 x 15		√	√		70-5,000	70-12,000
	7TRC1	$280	consol.	56	35 x 22 x 17		√	√		80-5,000±4db.	80-10,000±4db.
RECORDIO	702	$100	portable	26	8 x 14 x 12		√			85-7,000	
	712	$100	portable	26	8 x 14 x 12			√			85- 8,500
	732	$130	portable	26	8 x 14 x 12		√	√		n.a.	85- 8,000
	752	$170	portable	30	9 x 15 x 14		√	√		n.a.	65-10,000
	782	$270	portable	47	17 x 17 x 11		√	√		n.a.	65-15,000±3db.
REVERE	T-1100	$170[a]	portable	27	10 x 14 x 14		√	√		85-7,000±3db.	75-12,000±3db.
	T700D	$225[a]	portable	30	10 x 17 x 15		√	√		40-7,500±3db.	40-14,500±3db.
	T700	$235[a]	portable	30	10 x 17 x 15		√			80-8,000±3db.	
	T10	$245[a]	portable	30	10 x 17 x 15			√			60-15,000±3db.
SYMPHONIC	210	$150	portable	28	n.a.		√	√		80-6,000±5db.	80-12,000±5db.
	R-1200	$189	portable	34	10 x 15 x 15		√	√		50-7,000±5db.	50-12,000±5db.
TANDBERG	No. 2	$250[d]	portable	22	7 x 15 x 12	√	√			50-8,000±2db. 50-4,000±2db. @ 1⅞"/sec.	
	No. 3	$300[d]	portable	22	7 x 15 x 12	√	√	√		50-8,000±2db. 50-4,000±2db. @ 1⅞"/sec.	30-16,000±2db.
TAPESONIC	70-C	$399	portable	65	11 x 23 x 16		√	√	√	n.a. 30-18,000±3db. @ 15"/sec.	30-15,000±3db.
TELECTRO	1960	$80	portable	16	8 x 12 x 11		√	√		80-7,000±3db.	80- 8,500±3db.
V-M TAPE-O-MATIC	710	$190	portable	32	10 x 16 x 15		√	√		40-7,000±4db.	40-12,000±3db.
	750	$260	table	44	11 x 23 x 20		√	√		40-7,000±4db.	40-12,000±3db.
WEBCOR	2719	$150	portable	34	10 x 17 x 15		√	√		50-7,500	50-12,000
	2811[c]	$200[a]	portable	42	10 x 18 x 17		√	√		70-7,000±3db.	50-12,000±3db.
	2812[c]	$250[a]	portable	51	11 x 19 x 19		√	√		50-7,500±3db.	40-15,000±3db.
	2816[c]	$290[a]	portable	45	12 x 17 x 20		√	√		50-7,500±3db.	40-15,000±3db.
WOLLENSAK	T-1500	$190	portable	18	7 x 12 x 10		√	√		40-8,000±3db.	40-15,000±3db.

NOTE: n.a. Information not available [a] Also available, at added cost, with built-in radio
[b] Chassis with same specifications also available in more expensive cabinet

PLUTTER AND WOW (percent)	REWIND SPEED (feet per second)	FAST FORWARD (feet per second)	SIGNAL TO NOISE RATIO (db.)	GAP WIDTH (inches)	MAX. POWER OUTPUT AT 5% DISTORTION (watts)	SPEAKERS (number and size)	INPUT CONNECTIONS	OUTPUT CONNECTIONS	RECORD-LEVEL INDICATOR	TAPE REVOLUTION COUNTER	EDITING CONTROL	ARE ROLLERS RELEASED WHEN POWER IS INTERRUPTED?	NUMBER OF MOTORS
.3	10	6	45	.00025	3	1-6" x 9", 1-3½"	2	2	tuning eye	no	no	yes	1
.35	15	15	40	.0003	5	2-5¼"	1	1	dual neon	yes	yes	no	1
.2	20	20	40	.0003	8	1-10"	2	2	dual neon	yes	yes	yes	3
.2	20	20	40	.0003	8	2-8"	2	2	dual neon	yes	yes	yes	3
.4	20	20	50	.00025	5	1-6"	2	2	single neon	no	no	no	3
.25	17	13	45	.0004	5	1-6" x 9"	3	2	single neon	no	no	no	1
.2	19	19	45	.0004	8	1-3", 1-6" x 9"	1	2	VU meter	yes	yes	no	1
.15	13	13	46	.0005	3	1-5" x 7"	1	2	single neon	yes	yes	no	1
.2	30	30	45	.00025	10	1-6" x 10"	2	2	VU meter	no	no	yes	3
.3	30	7	45	.00035	8	1-6" x 9"	2	2	VU meter	no	no	no	2
.4	14	16	45	.00025	4	1-6"	2	2	single neon	no	no	no	1
.4	14	16	48	.00025	5	1-4", 1-6"	2	2	tuning eye	yes	no	no	1
.4	14	16	50	.00025	10	4-6"	2	2	VU meter	yes	yes	no	1
.4	12	10	45	.0002	6	1-3½", 1-6" x 9"	2	2	dual neon	yes	yes	no	1
.2	8½	8½	36	.00025	2	1-5" x 7"	2	1	dual neon	no	no	no	1
.2	8½	8½	36	.00025	2	2-3½",1-6½"	2	2	dual neon	yes	no	no	1
.2	8½	8½	36	.00025	5	1-8", 2-3½"	2	2	dual neon	yes	no	no	1
.5	n.a.	n.a.	35	.0002	3	1-4"	2	1	dual neon	no	no	no	1
.3	n.a.	n.a.	35	.0002	3	1-4"	2	1	dual neon	no	no	no	1
.35	n.a.	n.a.	35	.0002	3	1-4" x 6"	2	1	dual neon	no	no	no	1
.35	n.a.	n.a.	35	.0002	3	1-5" x 7"	2	1	dual neon	yes	no	no	1
.2	7¼	7¼	35	.0002	8	1-3½", 2-6" x 9"	2	2	dual neon	yes	yes	no	1
.3	13	13	48	.00025	5	2-5¼"	1	1	dual neon	yes	yes	no	1
.3	13	13	48	.00025	5	1-6" x 9"	1	1	dual neon	yes	yes	yes	1
.3	13	13	50	.00025	5	1-6" x 9"	1	1	dual neon	yes	yes	yes	1
.3	13	13	50	.00025	5	1-6" x 9"	1	1	dual neon	yes	yes	yes	1
.3	6	6	42	.0002	3	1-3½", 1-5" x 7"	2	2	dual neon	yes	no	no	1
.3	12	12	45	.0002	7	1-3½", 1-6" x 9"	2	2	dual neon	yes	yes	no	1
.2	20	20	52	.00025	5	1-5½" x 7"	2	1	tuning eye	yes	yes	no	1
.18	14	14	55	.00025	8	1-5½" x 7"	2	1	tuning eye	yes	yes	no	1
1	35	35	50	.0003	14	1-8"	1	2	VU meter	no	yes	yes	3
3.0	n.a.	n.a.	45	.0002	1	1-6"	1	0	single neon	no	no	no	1
.4	12	10	45	.0002	6	1-3½", 1-6" x 9"	3	2	dual neon	yes	yes	no	1
.4	11½	9½	45	.0002	6	1-3½", 2-8"	2	2	dual neon	yes	yes	no	1
.4	11½	11½	50	.00035	5	1-6"	1	2	tuning eye	yes	yes	no	1
.4	11½	11½	45	.00035	5	1-4", 1-5" x 7"	1	2	tuning eye	yes	no	no	2
.4	11½	11½	45	.00035	8	2-4", 1-6" x 9"	1	2	tuning eye	yes	no	no	2
.4	11½	11½	45	.00035	8	1-6"	1	2	tuning eye	yes	no	no	2
.3	10	10	48	.00025	10	1-5¼"	2	2	dual neon	yes	yes	yes	1

[c] Plus two electrostatic speakers [d] Also available, at added cost, with pedal-operated solenoid switches
[e] Records in both directions, eliminating reel turnover

you play one track, then flop the reels to bring the second edge into position.

What about stereo sound? The fact that standard tapes can hold two independent recordings has given rise to an important new development—stereophonic sound.

When they tape a live musical performance, engineers now spot two or more microphones in different positions and end up with two separate but simultaneous recordings which are then "printed" along the top and bottom edges of a tape. Playing a stereo tape through dual magnetic heads, amplifiers and loudspeakers restores to music a more lifelike quality of space and direction.

Most tape-machine manufacturers are now marketing stereo players. Except for the extra playing heads, connections for external amplifiers and higher prices, many of them are identical with the models listed in the chart. In a number of cases, therefore, you can use the same data for evaluating stereo units. Adapter kits for converting most current models are also available, should you want to add stereo to a standard or "monaural" recorder later on.

If you are interested in stereophonic sound or in conventional high fidelity, look closely at those features that are related to musical quality. High on the list is the machinery that drives the tape.

Check the drive. Bringing the tape into position to take or play a recording calls for a complex array of drive wheels, pulleys, belts, clutches, and brakes. An electric motor drives a capstan, or metal shaft, and the capstan—aided by a pressure roller—drives the tape.

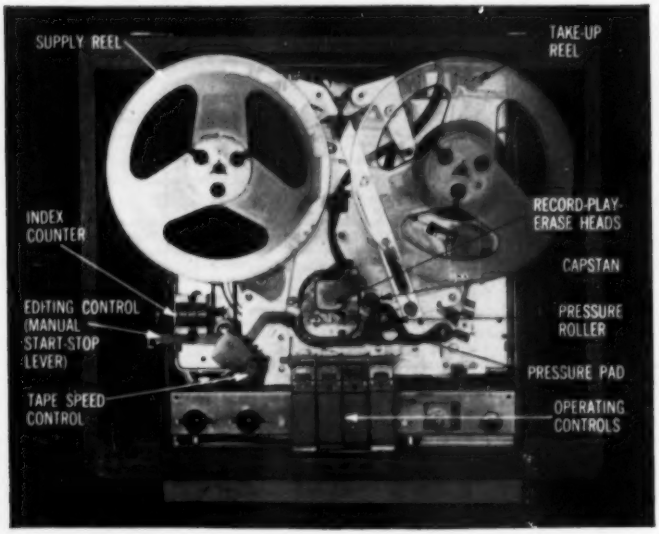
Very precise speed regulation is important to hi-fi because slight variations in tape travel can cause noticeable wavering, distortion, or change of pitch. The word "flutter" is used to describe the effect of rapid variations; slower irregularities are known as "wow."

The F & W figure is often closely related to the weight and price of a recorder. One reason is that a heavy flywheel helps to maintain constant speed. So does a better—and more expensive—motor. And machines built to meet the most exacting standards usually have two or more motors.

Why the extra motors? Well, tape must be transferred from one reel to another, so supply and take-up spindles also have to be driven—but at constantly varying speeds. The reason is that tape moves at a fixed rate while effective reel diameter keeps changing as tape is wound on or off. To provide for this, the take-up reel is driven through a clutch that allows plenty of slippage. During record and playback, the supply spool acts only as a lightly braked follower.

Before you can replay a tape, how-

[*Continued on page 264*]



Under-cover look at a recorder

THE WORKING PARTS of a typical tape transport are visible in this cover-off photo of a Revere T-700D. A pressure pad holds tape against magnetic head when machine runs, moves back when it stops. Most recorders have two magnetic heads—one to erase, another to record or play. A third head would let you monitor from the tape.

New Home Wiring Screws to the Wall

You need just a screwdriver to extend your electrical circuits and add the outlets you want

By George Daniels

ADDING new electrical outlets can be almost as easy now as plugging in a floor lamp. Use modern, plug-in outlet strips. Plug one strip into an existing receptacle, add other strips to make the extension you need, screw them all to the wall as in the photo above—and the job is done.

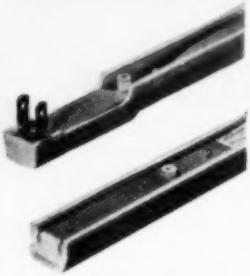
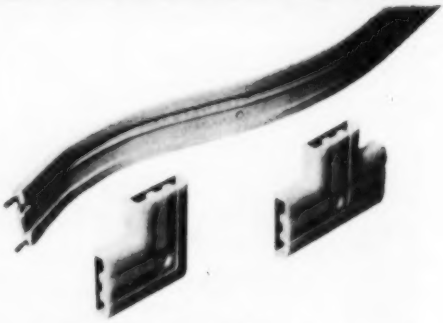
These plug-in outlet strips are one of three new types of surface wiring that let you add outlets where you want them. With these strips, you can plug in lights as well as appliances anywhere.

With the plug-in strips, you do the entire job yourself. With the others you may want professional help; connections are required inside the wall. All types are attached to the wall with screws.

Surface wiring for homes was developed from the raceway wiring used for years in factories and shops. The two still have points in common. But the new home types have been dressed up for the living room.

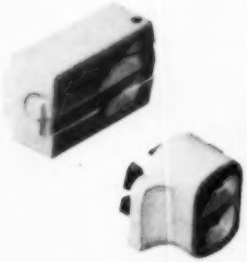
What's the cost? The parts you need are widely available in hardware and electrical stores. You can expect to pay about a dollar per running foot for materials. This is more than the average materials cost for conventional in-the-wall wiring. But if you figure in the extra advantages, plus the saving in labor by doing your own work, you can put in

The parts you buy for surface wiring

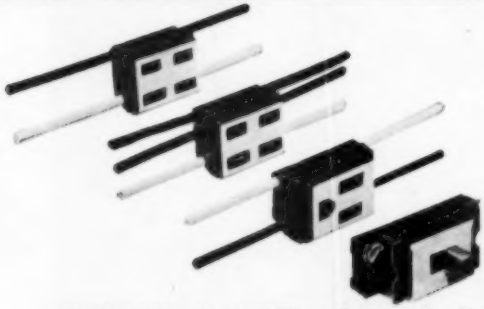
	HOW TO CONNECT IT TO THE POWER LINE	HOW YOU RUN IT ALONG THE WALL
For the plug-in type	 **PLUG STARTING STRIP** of rigid plastic into any existing outlet. That's all there is to it.	**YOU BUY PLAIN SECTIONS** to carry current anywhere along the wall. Each is 12" long, plugs into the next strip. To turn corners, you insert flexible strip (also shown).
For the flexible type	**ADAPTER PLATE** is substituted for original receptacle and plate. Strip plugs into the adapter.	 **YOU BUY FLEXIBLE STRIP** in length you need. It has two wires molded in plastic, costs about 54 cents a foot. Angle and T connectors let you turn corners, run branch lines.
For the metal type	**COVER PLATE** joins metal channel to any existing outlet box. Wires in box are fed out through hole.	**YOU BUY METAL CHANNELS** in 5' or 6' lengths, then run separate wires inside them. Plain sections cost about 20 cents a foot, those with outlets about 81 a foot.

HOW YOU INSTALL THE RECEPTACLES

YOU BUY RECEPTACLES in sets of three, molded into 12″ strip. These plug into plain sections, can be inserted wherever you want outlets. The strips cost about $1 each.



CLIP-ON RECEPTACLES with connector prongs can be fastened to strip anywhere you want. You can get a fused outlet (at top) for about $1.50, a standard type (at bottom) for 60 cents.



THREE TYPES OF OUTLETS and a switch all fit in prepunched holes in the channels. Receptacles are (left to right): standard duplex, switch-controlled type, grounded type.

surface wiring for about the same cost as ordinary wiring installed by a licensed electrician.

The plug-in strips are rigid plastic, each 12″ long. The starting section plugs into any outlet; each succeeding section plugs into the end of the one ahead of it.

Where you wish to have outlets, you insert a section that has receptacles molded into the strip. In between, you use plain spacer strips to carry current.

This type of wiring is called "nonmetallic surface extension." Its heavy-duty No. 12 wires will safely handle a full circuit load; an ordinary extension cord won't.

Multi-outlet strip is a similar type of surface extension, but has no fixed outlets built into it. It's a flat, ribbon-like flexible plastic strip with No. 12 wire embedded under a lip at each edge. You put up the strip first, then clip separate receptacles into it wherever you want them. Prongs on the clip contact the wires. You buy only the outlets you need. Later you can add more or rearrange the ones you have.

This type of strip does not plug into the wall like the rigid type. The starting end is wired permanently into the existing wall box.

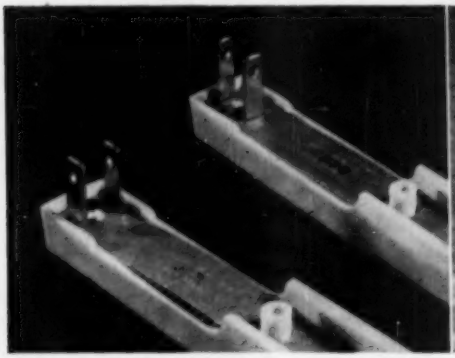
Both types of plastic wiring look best if kept low—either on or just above the baseboard. Run vertically up a wall, they may become conspicuous.

The third type resembles the old raceway wiring. It is a little more expensive and harder to install than the other new surface types. But it has a number of special features. The wires run inside a slim metal channel capped by a snap-in cover plate. Outlets, switches and light fixtures can be mounted right in the channel. If you want to change them later, you just pry off the cover plate to expose the wires.

You can also add extra circuits depending on the type of raceway you buy. Several sizes are available, some holding up to five or more separate two-wire circuits. The biggest channels are expensive and you probably won't need them, but it's a good idea to allow for at least one future circuit.

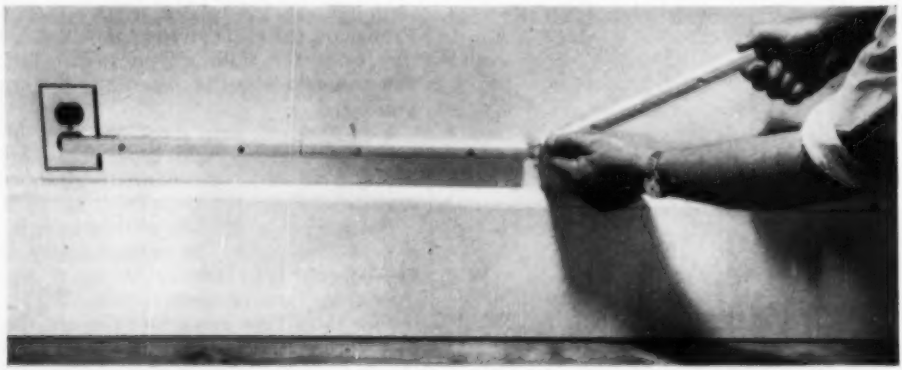
Which raceway for you? Not all makes of raceway offer the same features. So it's important to decide what you want before you buy. Most types come

Plug-in strips require no wiring at all

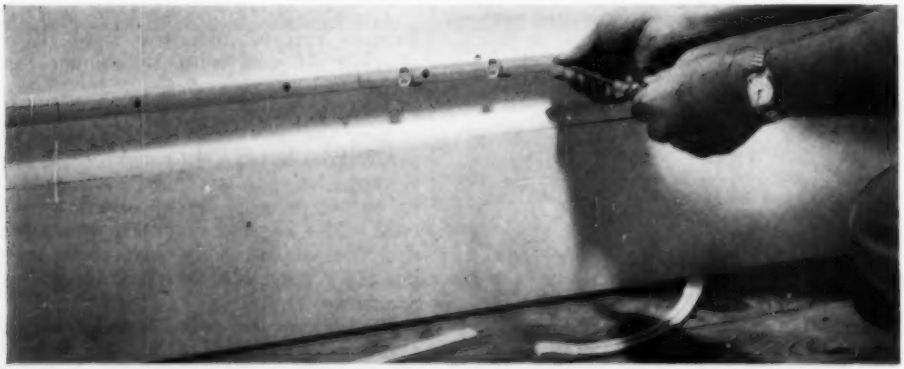


PRONGS ON THE ENDS of these starting strips plug into any existing outlet like an ordinary extension cord. You can buy them with the plugs turned either way so that strips can be run horizontally or vertically from the outlet.

FLEXIBLE SECTION is inserted wherever you want to turn a corner. It bends 90° either flatwise or edgewise. Uneven wire ends, caused by bending, are clipped off to equal length to form a plug that joins the next section.



RIGID PLASTIC STRIPS carry power along the wall from the existing outlet to where you want new receptacles. These are plain sections, each 12″ long, containing no outlets. Sections plug together, can be run any distance, and are mounted with screws to wall or baseboard.



OUTLET SECTIONS can be inserted anywhere between plain strips, usually every 2′ or 3′. This brand has three receptacles spaced along each 12″ length. If the existing outlet happens to be in the middle of the wall, you can run separate strips from it in both directions.

in 5′ or 6′ sections, which you hacksaw to the length you need.

You can use metal raceway as a baseboard itself, eliminating wood trim. If it touches the floor, however, you'll need a special wide type—somewhat costlier—that raises the outlets to the required legal distance above the floor. You can also get a rounded metal cap strip that clips to the top of a raceway. This gives the neat appearance of quarter-round molding and can also be used to house low-voltage wiring for doorbells, hi-fi systems and telephones.

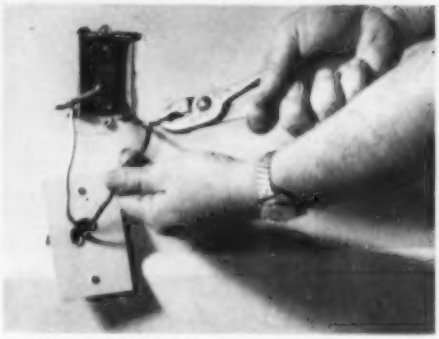
Raceway is wired by making a permanent connection at one end to an existing wall box. The outlets come pre-wired in long strings, eliminating connections between the receptacles. You can buy them spaced from 3″ to more than 5′ apart. In addition to standard outlets, you can buy double receptacles wired so that one half is always on, while the other half can be controlled from a switch. You can also get the newer three-way grounded receptacles recommended for power tools and appliances.

Where to use the strips. The nonmetallic types (both rigid and flexible plastic) can be run only in *exposed, dry areas.* You cannot use them in basements, attics, garages or other possibly damp locations, and you cannot run them through or inside a wall. They must not be allowed to touch the floor or come any closer than 2″ above the floor. In mounting them, attach them only to wood or plaster surfaces, away from all metal except for the one connection at the wall box.

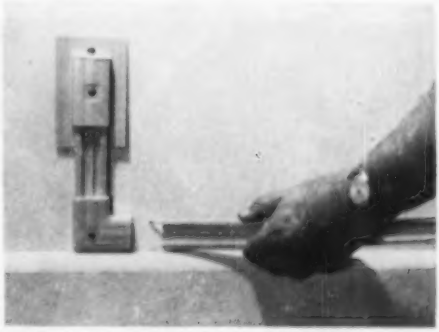
Metal raceway is the only type of outlet strip that can be used in basements, attics or other unfinished areas. Because of its metal channel, it provides a continuous ground connection back to the fuse box, as the other, nonmetallic strips do not. Even raceway, however, should be kept away from any excessively damp areas, such as wet cellar floors or walls. In basements, workshops, kitchens and utility rooms it should also be fitted with the three-way grounded type of receptacles.

None of the strips should be placed near excessively hot locations, either. If you have baseboard heaters, don't mount the strips directly against them. Fasten a 1″-by-2″ wood spacer strip above

Flexible strips need only one connection

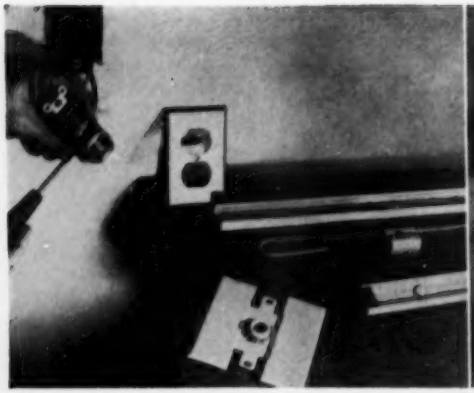


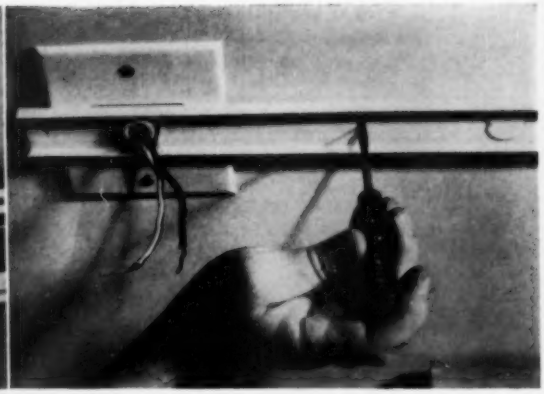
ADAPTER PLATE is first connected to existing wires in outlet box after power has been shut off and original receptacle has been removed. Wires must be soldered and taped, or joined by solderless connectors, in the approved way.



ONCE PLATE IS ON WALL, plastic strip plugs into it, requiring no further wiring. Here a short length leads down to angle connector, then strip runs along baseboard. Wires are bared ½″ at ends to form connector plugs.

OUTLETS CLIP ON wherever you want them, making contact with wires in plastic strip. Receptacles are polarized, can be inserted only one way. This strip has off-center ridge, preventing accidental reversal of wires.

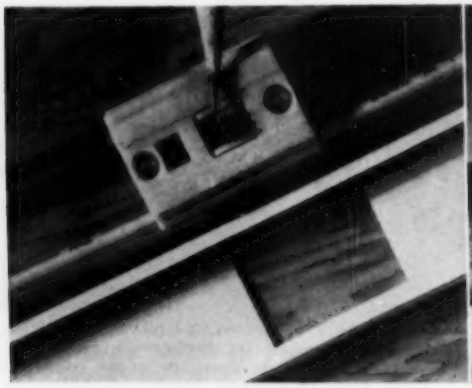


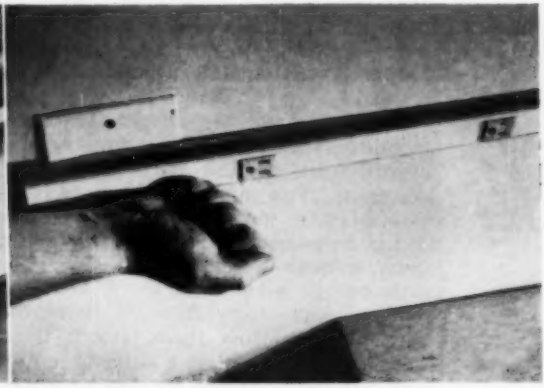


How metal raceway is run along the wall

TO START A STRIP, power is shut off, and old outlet is removed from wall box. Existing wires are then fed out hole in new adapter plate (on table), and plate is screwed to box.

METAL CHANNEL is attached to wall plate by opening knockout hole in back and bolting channel to threaded bushing on plate. Channel is screwed to wall through predrilled holes.



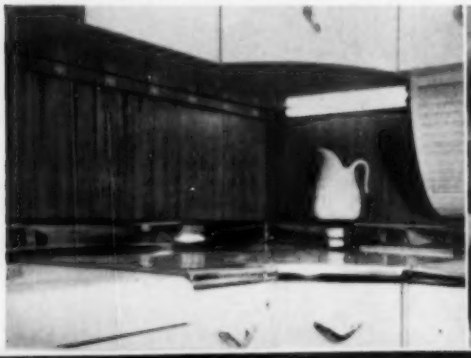


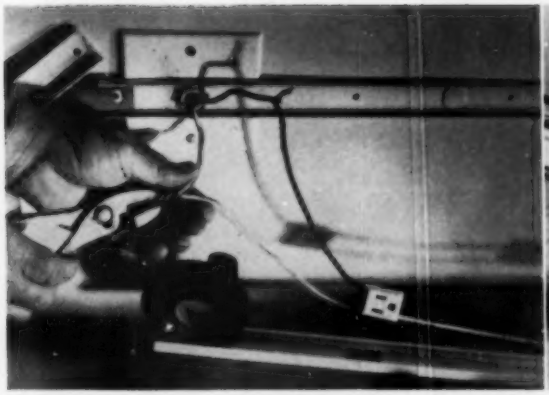
THIS GROUNDED RECEPTACLE has a spring-metal prong on back that presses against metal channel and makes ground connection back to fuse box. Outlet has three holes to take either regular two-prong plugs or new three-prong plugs.

COVER STRIP snaps in place over channel on wall. Start at one end and work toward other, striking cover smartly with fist. Wiring can now be painted to match wall. The type shown here also comes in several other sizes.

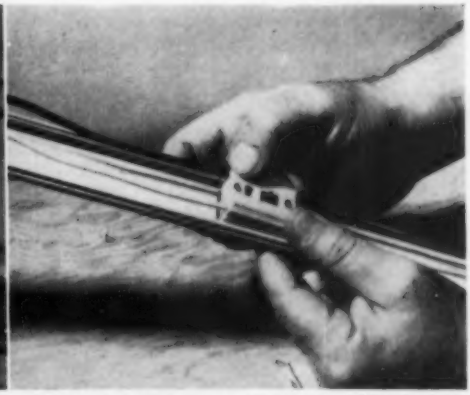
You can even add a light to your raceway

PRE-WIRED FLUORESCENT FIXTURES provide convenient work light, along with outlets for appliances. To install one, a section of the metal cover is hacksawed out and fixture fits over channel. Where raceway is used for lighting in rooms having appliance circuits, such as kitchens, it must be connected to some circuit other than the regular appliance circuits.

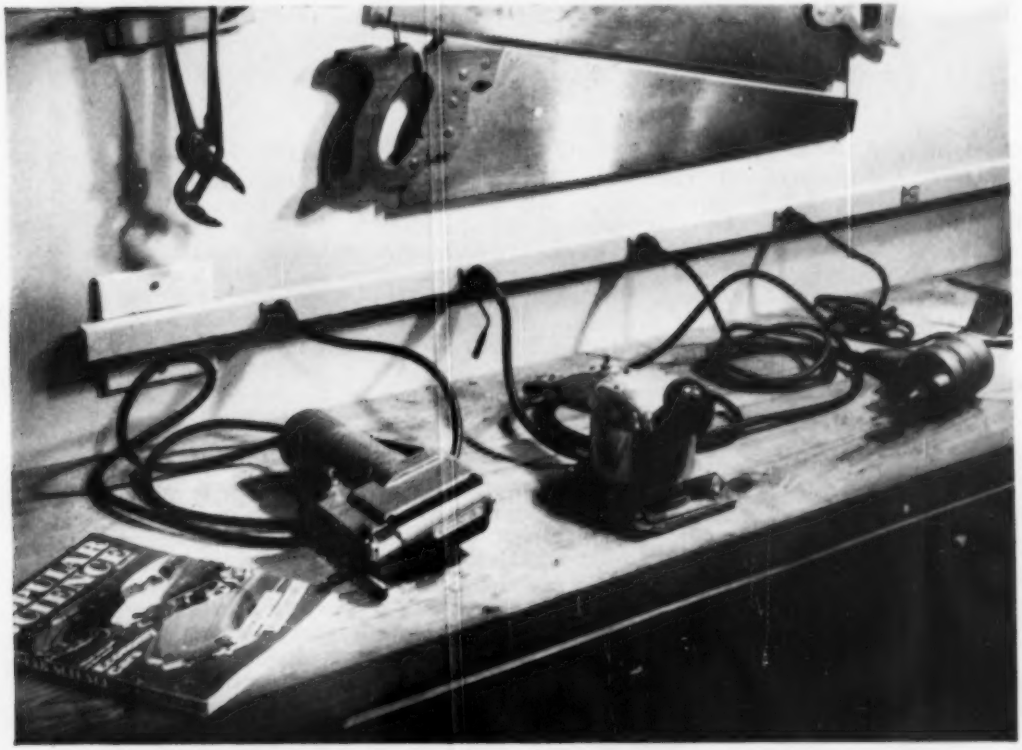




PRE-WIRED OUTLETS come in long strings like this. Only two connections are necessary to join end of strip to existing wires from wall box. Wires are twisted tightly together—white to white, black to black—then soldered and taped, or capped with solderless connectors.

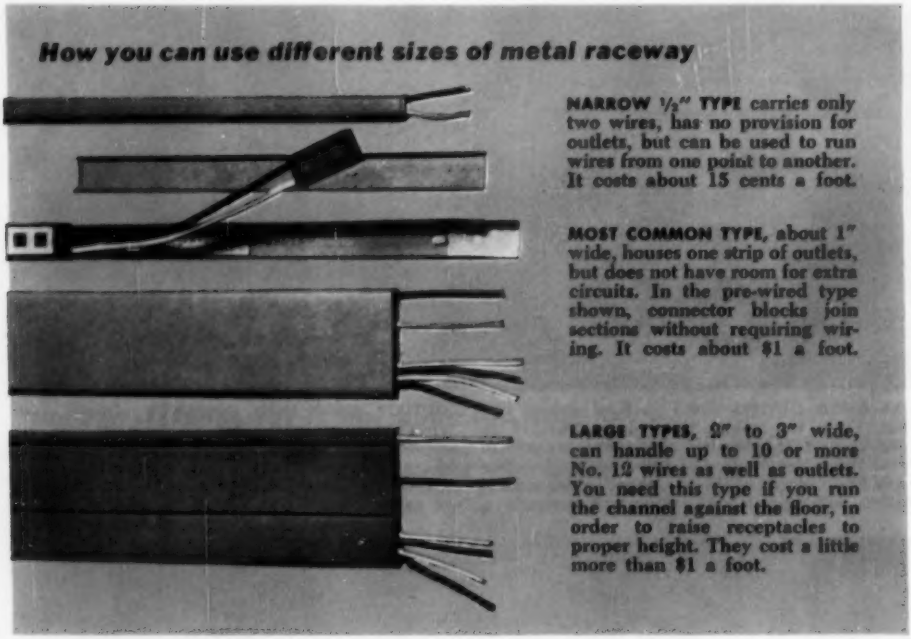


OUTLETS SNAP INTO OPENINGS already provided in metal cover strip. In some other types, outlets are fastened in the channel first and the metal cover snaps over them. Unused wires at end of outlet string should be carefully wrapped with plastic electrician's tape.



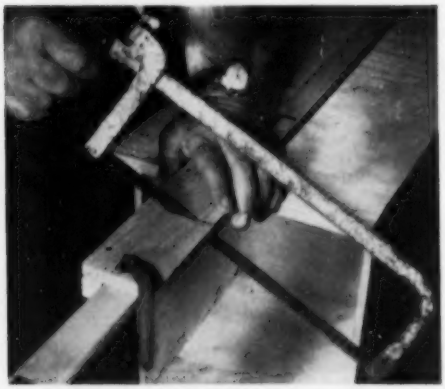
Multiple outlet strips can speed your shopwork

NO LONG, TANGLED EXTENSION CORDS are needed with a setup like this. You can keep several tools plugged in at a time, ready for quick use, with no plugging-unplugging nuisance. But remember—you get more convenience, not more capacity. Never put more than normal load on a circuit or the fuse may blow. Receptacles here are grounded type, recommended for tools.



the heaters, flat side against the wall, then run the wires above the wood.

How many outlets? There's no legal limit to the number of outlets you can add so long as each strip stays in the same room where it starts. You cannot run a strip from one room into another room through the wall.



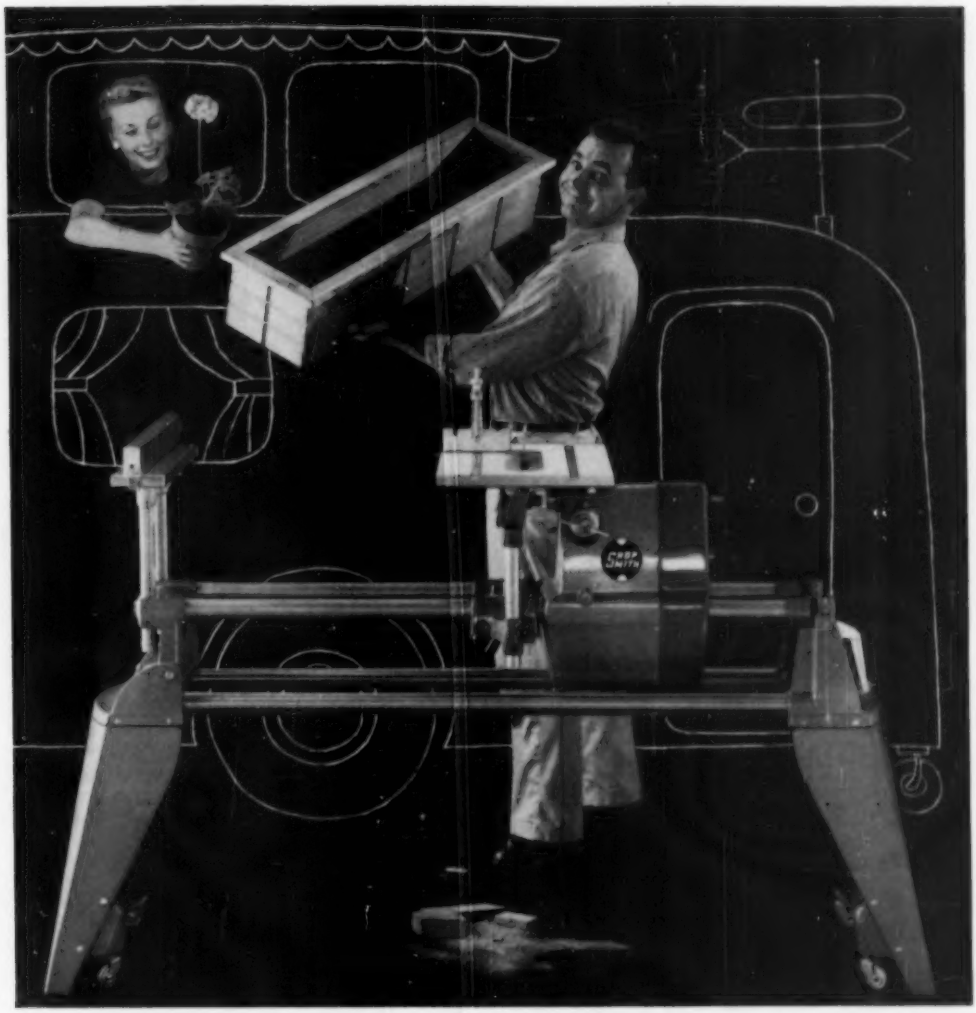
TO GET A NEAT, SQUARE CUT on metal raceway, clamp on a wood strip with a guide slot for the hacksaw. For a fast, smooth cut, use a fine-tooth blade—either 32 teeth per inch or a special 40-tooth blade made for the job.

There's no point to adding more outlets than you can conveniently use—they're one of the most expensive parts of the deal and will just run up the cost. For baseboard use, an outlet every 30" to 60" is adequate. For a kitchen counter or workbench, you may want one every 12" or less.

It's also wise to remember that adding outlets does *not* increase the current-handling capacity of the original branch circuit. You must take care not to turn on any more lights or appliances at the same time than you normally would.

In some homes, the outlets in each room may be fed by two circuits instead of one. If you tap into only one existing wall box, you are thus likely to waste one circuit while overloading the other. In this case, it's best to split your wiring, running two strips from two separate wall boxes, one on each circuit.

The plastic strips do not provide for switch controls, but there's a trick you can frequently use to get a switched circuit. Often one outlet in each room is wired to a wall switch. If you connect the strip to this box, all of your new outlets will also be controlled by the same switch. END



It's amazing — the things you can build with SHOPSMITH!®

Even a home on wheels becomes an easy project when you own SHOPSMITH! For whatever you want to build — big or small — you can build it with SHOPSMITH from *start* to *finish*. Only SHOPSMITH is a complete power shop in one magnificently engineered unit. No extra tools to buy. And, as every craftsman knows, you need different tool speeds for different operations; no one-speed power tool is enough. But SHOPSMITH, with exclusive Speed-Dial, lets you select correct, *safe* tool speeds for any woodworking operation. Visit your leading hardware or department store, lumber yard, or any Montgomery Ward, and find out why over 250,000 men now own SHOPSMITH. For two helpful free books on home workshops, write Magna Power Tool Corp. Dept. 302-S, Menlo Park, Calif., or Dept. 302-S, Box 2808, Fort Wayne, Ind. ® T. M. REG.

SHOP SMITH

MAGNA POWER TOOL CORPORATION

ONLY SHOPSMITH LETS YOU COMPLETE THE JOB!

New! Kodak Pony II Camera

Makes 35mm color slides faster, easier than ever. Only $26.75

With the new Kodak Pony II Camera you'll take gorgeous color slides, crisp black-and-whites, ***right from the start*** . . . and do it easier than you ever thought possible.

Here's why: You make only ***one setting*** for correct exposure—and a guide on the camera tells you how. Focusing is just as easy. You dial the kind of picture you want to take—"Close-up," "Group," or "Scene." Then you frame the picture the way you like it in the big viewfinder—and press the button.

Even if you've never taken a picture before, you can learn everything you need to know about the Kodak Pony II Camera in a matter of minutes. It loads without threading, cocks the shutter automatically, counts each exposure made, keeps you from making "double exposures." In short, it handles so smoothly that all you have to think about is the fun of taking pictures!

Ask your photo dealer about the Pony II's fast *f*/3.9 lens and remarkable operating ease. And remember, you can own a Kodak Pony II Camera for as little as $2.70 down.

New Exposure Value Settings

All four new Kodak cameras described here are calibrated with exposure value numbers which make picture-taking faster . . . easier than ever. A guide on the camera tells you which number to use to ***set everything*** for the right exposure.

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

New!

KODAK PONY IV CAMERA

has the deluxe features 35mm fans asked for!

Here are some of the *plus* features that make this the finest Pony ever built . . .

Exposure settings are ultrafast. For each picture situation, a guide on the camera tells you which *exposure value number* to use. Simply match this number with the camera settings—and shoot! (Kodak Pony IV Camera has new *exposure value scale* markings as well as conventional shutter-speed and lens-opening settings.)

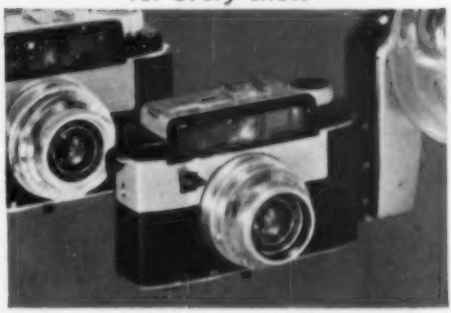
Focusing is equally fast. You can dial for "Close-ups," "Groups," "Scenes,"—or focus by scale from 2½ feet to infinity. Other Pony IV features: automatic double exposure prevention *plus* a release for intentional multiple exposures; direct body-contact flasholder fittings *plus* a handy accessory clip on top of the camera. And to give you really sharp pictures, the Pony IV has a fast, Lumenized *f*/3.5 Kodak Anastar Lens.

New Kodak Pony IV Camera, $39.95, or as little as $4 down.

New!

KODAK SIGNET 50 CAMERA

measures the light for every shot!

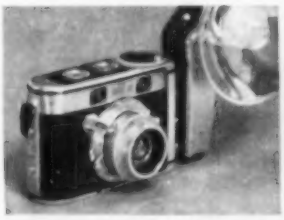


Precision photography has never been simpler! With the Kodak Signet 50 Camera (right) a photoelectric meter tells you the right exposure for a subject. All you do is read the number on the meter, set the same number on the camera—and shoot! An exceptionally fine *f*/2.8 lens and an 8-speed Kodak Synchro Shutter let you take top-quality pictures anywhere, any time.

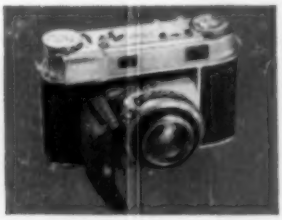
Your photo dealer will gladly show you the new and automatic features that make Signet 50 the fastest, surest operating 35mm camera Kodak has ever built. You can own a beautifully styled Kodak Signet 50 Camera complete with flasholder and two reflectors for $82.50, or as little as $8.25 down.

Kodak Signet 30 Camera (left) is identical with the Kodak Signet 50 Camera except that it has no built-in light meter, and does not come equipped with flasholder. $55 or as little as $5.50 down.

Ask your photo dealer about these other fine Kodak 35mm Cameras...



Kodak Signet 40 Camera. Precision camera with rangefinder and handy dual-reflector flash system, $74



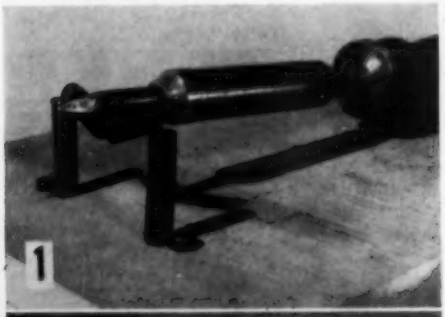
Kodak Retina IIIc Camera. Has coupled rangefinder, ultrafast *f*/2 lens, built-in photoelectric meter. $175

Kodak Retina IIc Camera. Has *f*/2.8 lens, no exposure meter. $132

Prices are list, include Federal Tax, and are subject to change without notice.

Kodak
TRADE MARK

6 USES FOR Door Springs



1 Soldering-Iron Rest. Open the coils at three places with a screwdriver and bend the spring into the shape of an "M". Bend outward one turn at the bottom of each leg and screw the spring to the bench.

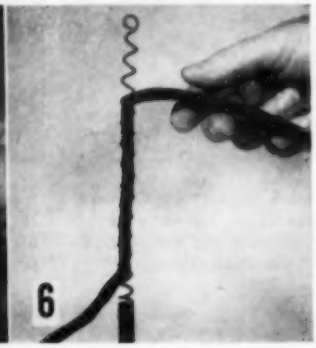
2 Hot-Plate Holder. Bolt the ends together to form a circular rest that will prevent heat damage to a table top. A spring bent into a rectangle or triangle will hold dishes of various sizes.

3 Tool Rack. Stretch the spring taut and screw the ends to the backboard of the workbench to hold small tools in place. Staple the spring at several points to create pockets. Inside a cabinet door, a stretched spring will hold pan lids.

4 Paintbrush Cleaner. Stretch a short piece of spring and clip it over the edges of the solvent can. The open coils will separate the bristles, loosen the paint and allow the solvent to penetrate.

5 Door Pull. An unusual pull for a cabinet door or drawer can be made by screwing down the ends of a short piece of door spring. Space the screws closer than the spring's length to make it bow outward in a curve at the middle.

6 Appliance-Cord Support. Screw a spring to the bench or work table so that it stands upright. Stretch open the top half and wind the cord around the coils to put it inside the spring.



It's tough enough when a repairman can see the trouble, but it's a black day when he tangles with:

The Strange Case of the TV Phantoms

By Art Margolis

I BACKED slowly toward the door. Whatever the bartender was holding under the bar looked heavy and ominous. He came toward me . . .

You get to expect things like this when you're in the TV-repair business as long as I've been, but this was worse than usual. It was another case of the TV Phantoms, as I call them. These are troubles that have nothing to do with bad parts inside a TV set. They're caused by interference outside a set, and it often takes a detective as well as an electronics man to track them down. That's where trouble begins: Customers don't want excuses—they want results.

Here are five cases of phantom TV troubles I've had lately, including my brush with the burly bartender.

The Fee I Didn't Collect

ONE late afternoon I found myself answering a call in a run-down bar over in the tough part of town. The ex-prize-fighter bartender was mountainous.

"It's a brand-new TV and it's nuts," he growled. "The people keep jumping back and forth on the screen. The boys in here take one look and walk out. That ain't good for business, see?"

I ran the usual checks on the set. It

was in perfect order. Yet every few seconds, the 17" screen would be full, then the picture would suddenly shrink. As the picture lost size, the performers gave the impression of jumping.

"Snap it up, Mac," barked the bartender.

I timed the collapsing picture. It occurred every four seconds. Each time there was loss of horizontal sweep, vertical sweep, brilliance, contrast and audio. What could cause all this simultaneously? I applied the probes of my voltmeter to the wall socket. The line voltage was jumping from 117 down to 90, then back up to 117 every four seconds. Something was snatching voltage.

One by one I went through all the appliances in the bar and found no trouble. It was getting dark. The bartender moved menacingly toward me.

"Look, pal, the boys won't stand for no nonsense. You fix it fast."

Some of the "boys" slid off their bar stools and stood around me. In the near-darkness, I suddenly became aware of a flashing light that lit their faces with the eerie glow of a grade-B movie scene. There, across the street, was a mission house with a two-story-high sign that blinked the warning: "Save Your Soul."

I counted: 1 . . . 2 . . . 3 . . . 4. The sign went off. Exactly four seconds later, it flashed on again. At the same time, the TV performers started jumping.

I pointed. "There's your trouble. That sign pulls so much current that it drops the voltage in your set every time it flashes. The drop in voltage causes your picture to shrink. The wiring for this entire street is so old it can't supply enough power."

That stopped them for a minute, but I could see they weren't happy about the mission's sign spoiling the show.

"I can't fix the wiring," I told them, "but I can send a man from the power company who can."

I didn't wait for their answer. I headed for the door.

Couple of weeks later, my friend Jim at the power company called. "We fixed that bar job you told us about. Set works fine now. Bartender there, nice guy, says you never got your fee, says you can take it out in free drinks any time."

"Thanks, Jim," I said, "but I think that's one fee I won't bother to collect."

The Case of the TV Intruder

ONE quiet fall evening I was cleaning up the shop while my helper, young cousin Pete, was slouched on a stool watching a movie on TV. Suddenly he yelled, "My gosh, Art, look at this!"

I looked. Suddenly one of the actors disappeared and a snowy picture of roller skaters took his place. Then, just as suddenly, they were gone and the actor returned. This was on Channel 3.

I said to Pete, "Sit by the telephone. It's gonna start ringing."

Pete naturally did a double-take. I started to explain.

In school, I reminded him, we learn about that layer of atmosphere in the sky starting between 25 and 50 miles and going on up as high as 400—the ionosphere. The layer between 50 and 80 miles they call the E layer. In this layer the air molecules are more thinly scattered than at low levels, yet not as sparse as higher up. They are spaced just close enough to become heavily ionized by ultraviolet and cosmic-ray bombardment, yet not close enough to collide with each other and lose their ionization.

When waves from TV stations hit the ionosphere, especially the E layer, they are bent.

Pete had an I'm-way-ahead-of-you glint. "You mean they're bent like a spoon looks when you stick it in a glass of water?"

"Something like that."

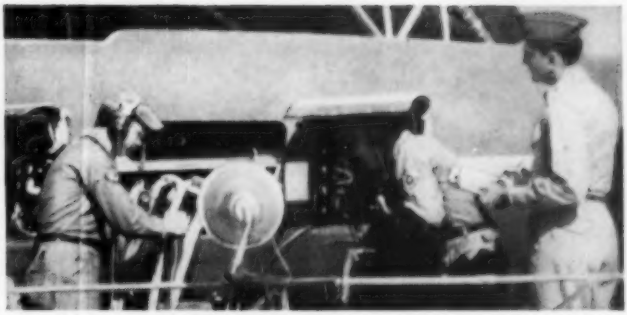
"Okay, so they're bent," Pete went on. "But they pass right through this layer, don't they?"

I shot Pete my best I've-got-you-now look. "Most of the time they do. But suppose the E layer was very heavily ionized and the TV waves hit it at a very flat angle. What would happen?"

YOUR SKILL

plus

SOUND TRAINING



means a real future in the new

AGE OF SPACE

If you "like to get under the hood," you have a great future in the new Age of Space. This is the age of the technician—the man who knows rocketry, jet propulsion, electronics or another of the allied fields. As an Airman in the U. S. Air Force, you get the most complete training available in these Space Age specialties. Remember: *the future belongs to the Airman.* Talk to your Air Force Recruiter, today, or mail the attached coupon.

go places faster in the

U.S. AIR FORCE

PASTE COUPON ON POSTCARD AND MAIL TO:

Airman Information, Dept. PS-2321
Box 7608, Washington 4, D. C.

Please send me information on my opportunities in the U. S. Air Force. I am between the ages of 17-34 and reside in U.S.A. or possessions.

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Pete's eyes brightened. "They might bounce back to earth, like when you skip a stone off the surface of water."

"Right," I said. "Only a few waves bounce back, but when atmospheric conditions are just right that's all you need. In this case, there's another Channel 3 transmitting a picture of roller skaters about 400 miles away and it's pushing our Channel 3 off the air. This is called sporadic E skip."

"Gee," said Pete, "I had it figured all the time."

The phone started ringing. "Sure," I smiled, "and now that you're an expert on sporadic E skip, you can explain it to all our customers as they call in while I get on home for supper."

The Phantom That Sold a Set

THE pert young housewife said, "Don't bring it in here!"

Her husky husband said, "Don't listen to her; put it on that table."

I was delivering a 17" portable TV for a department store. It seems that the wife, with her eye on the budget, didn't like the idea of the three-year financing, even for an anniversary present and even after the salesman had pointed out that it cost them only 13 cents a day.

Since the husband was bigger, I was admitted and hooked up the TV. The

picture came on beautifully—that is, on every channel except Channel 3.

On this channel a black jagged bar about a half-inch wide ripped horizontally through the picture with an accompanying buzz in the sound. Since I had checked the portable before delivery I was pretty sure it was that old phantom—TV interference.

The wife saw the picture and yelped, "It doesn't work. Take it out!"

The husband said firmly, "Give him a chance, dear, it just needs some adjusting." He gave me a pleading look.

I checked each appliance for interference. No soap. I started knocking on the neighbors' doors and tested their appliances. Still no luck. I eliminated the light switches one by one.

Then I noticed an attic stairway and went up and opened the door. A forgotten light bulb flickered in exact time with the TV's buzz. I knew what was wrong.

As in many old attics, the bulb was an ancient carbon-filament type with no frosting on the glass. The carbon filament had cracked but not opened up. Sparks were flying across the cracks. All this electrical action caused the filaments to resonate, and guess what frequency they resonate around—Channel 3.

I put in a new bulb, and the jagged bar and buzzing sound disappeared.

But can you beat it? The wife was actually unhappy that I had found the trouble. Then a thought struck me. I figured out what that bulb cost each day it was burning. It turned out to be 13 cents a day—exactly what the new set would cost. The wife was so pleased about saving the money the bulb would have burned that she relented. The set stayed. I didn't tell her, of course, that just as I had removed the bulb, it had given its last gasp anyway.

The Credit Risk

IN ORDER for a TV repairman to stay on the black side of the ledger, he has to size up customers in case they want credit. Little clues in their homes, such as shabby furniture, are sometimes a tipoff to a bad risk.

One new customer admitted me with a gruff "Look at that picture" before I had barely stepped through the door. The reception, I had to agree, was not good.

In some places, if you're located midway between two big cities, as we are, it is possible to get every channel from 2 through 13. This fellow was getting all of them—but with one complaint. Channels 4 and 11 had a heavy herringbone pattern on top of the picture. As I was examining each channel, the phone rang. I got the first indication of the man's credit status as he said into the telephone, "Not a chance! Possession is nine-tenths of the law," and hung up.

I went on working. All channels were coming in strong enough to show. But

now, in power tools, too,

if it's Remington, it's right!

powers a whole workshop of attachments!

OPERATES THESE AND MANY MORE

Here's an electric drill with power to spare! Now you can assemble a complete, low-cost home workshop around just one powerful tool—the Remington 149B drill by Mall. It's precision-built to handle most any job ...to give a lifetime of rugged service. Fits planer, sander, saw and dozens of other attachments. Does many jobs out of the workshop, too, from hedge trimming to car polishing.

*Specifications and recommended price subject to change without notice.

SEND FOR FREE, 16-PAGE CATALOG

showing every type of electric hand tool. Tells what each tool will do. Gives prices and specifications. No cost, no obligation. Send coupon today.

Mail this coupon today!

MALL TOOL COMPANY FS-11
Division of Remington Arms Company, Inc.
Bridgeport 2, Connecticut

Please send without obligation FREE, illustrated catalog on electric tools.

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE ____

Remington *Mall*®

MALL TOOL COMPANY,
Division of Remington Arms Company, Inc., Bridgeport 2, Connecticut
In Canada: Mall Tool, Ltd., 35 Queen Elizabeth Blvd., Toronto, Ont.

Channels 4 and 11 were being interfered with by 3 and 10. The audio signal on 3 arrives on the carrier frequency of 65.76 megacycles. The picture signal of 4 arrives on a carrier of 67.25 megacycles. The sound for 3 and the picture for 4 are thus only 1.5 megacycles apart, while the sound and picture on 4 are 4.5 megacycles apart.

The TV set was not able to tune close enough to keep the sound of 3 from appearing in the picture of 4 as a herringbone overlay. The same thing was happening with Channels 11 and 10.

My unsmiling customer asked what I could do. "This is called adjacent-channel interference," I told him. "I can install traps that will nullify whichever frequencies you tune them to. Then you can cancel out Channel 3 while 4 is on, 10 while 11 is on, and so forth."

He said, "Install them."

I gingerly explained that he needed two traps, one for Channels 2 to 6 and one for 7 to 13, and that they were $20 apiece.

He growled, "Well, install them, boy, install them."

I did, and they turned the trick beautifully. But as I began writing the bill, I noticed a stack of other bills on a table, marked "for collection." There was also a letter from a sheriff. I handed him my bill and braced myself for a con pitch. Instead he handed me two twenties, then an extra one, and said gruffly, "Buy yourself a cigar."

Bewildered, I started to walk out. What was all the bad-pay evidence about? He called to me as I climbed into my truck.

"Incidentally, buddy, if anybody ever tries to push you around, let me know. I'm the new marshal."

Double People—Double Trouble

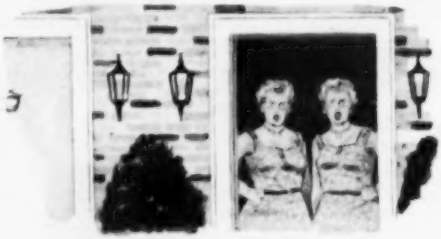
I received a call from a block of semi-detached twin homes. When I knocked on the door, two identical, well-fed women appeared. They shot a blast of fast-spoken words at me. They lived side by side, and they both had the same TV trouble. Intermittently, Channel 6 would be blanked out.

"There's a ham radio operator down the street," they told me. "It's his fault."

The two husbands had been in one house watching the fights, and the twins had gone into the other home to see a love story. When they turned on the set, Channel 6 disappeared. The twins quickly commandeered the other set, but that Channel 6 was also knocked out. They called the ham and, sure enough, he had been broadcasting.

I turned one TV set to 6. Then I turned the other set to 3. Channel 6 washed out. I knew what had happened.

In every TV set there is a circuit called the local oscillator. It maintains its running frequency about 20 mega-



cycles higher than the channel the set is tuned for. In some sets, a little of this oscillator energy sometimes leaks and radiates out the antenna.

The twin living rooms were back to back and the TV sets were only inches apart. When one of the sets was turned to Channel 3, its local oscillator ran 20 megacycles higher, which is Channel 6's frequency, and this blanked out Channel 6 on the other set.

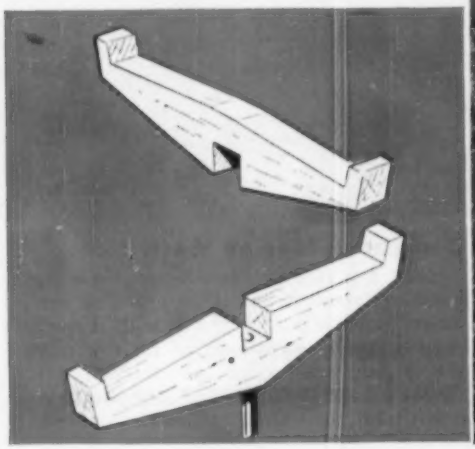
Moving the sets to different walls quickly cured the trouble. But the end of the story didn't come until later. I got a call from the radio ham who had also been blamed for other interference in the neighborhood. That is, he had been blamed until the twins heard about it. They went from door to door and quickly quelled all complaints. END

Short Cuts and Tips

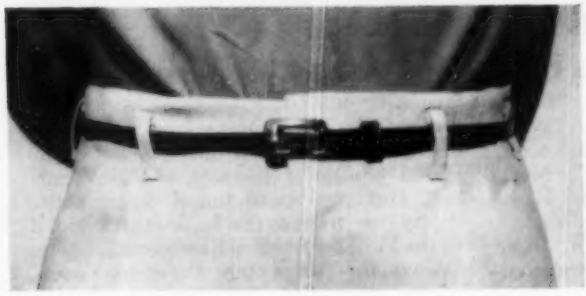
FROM PS READERS

Big Saucer Makes Bird Bath

BIRDS that stay the winter will flock to a birdbath because they can't depend on puddles, wading pools and summer showers for water. A giant flowerpot saucer makes a good one. Rest it on crossed pieces of wood, shaped on a bandsaw or jigsaw. You can buy a 16" saucer at a nursery (mine cost $1.75). If it is unglazed, seal the upper surface with varnish.—*R. H. Copperud, Stockton, Calif.*



Plastic Belt Made from Twin-Lead Keeps His Trousers Up



WHEN my leather belt wore out, I salvaged the buckle and the rivets and re-used them on a length of TV aerial twin-lead. The plastic is durable and resists scuffing, and my new belt has the conservative appearance of the plastic ones that cost more than a dollar in the stores.—*J. A. Stockton, Pittsburgh, Pa.*

Short Cuts and Tips

Old Tires Start Brush Fires Fast

WHEN we moved into our new house, we had dead trees, brush and weeds to dispose of. I built piles of debris, each on top of one or two worn-out tires stuffed with newspaper, and set a match to them.

My gas station was glad to get rid of the tires and I found them a sure-fire way to burn anything—even wet or green trash—with minimum smoldering. —*F. B. McCue, Tarentum, Pa.*

Coin Makes a Curved Scraper

SCRAPING off paint that is peeling from gutters can be a real headache, especially when you reach the curved sections. Where there are concave surfaces, try using a large coin or a heavy metal washer as a scraper. The disk fits the curve and a few scrapes get down to bare metal.

Cement Serves as Mask

EVER try rubber cement for masking small surfaces? Brush it on and you can spray or brush paint right over it. I used it to protect chrome strips on my car. When the new paint job was dry, I rubbed off the cement and any paint on it rolled off, too.—*H. Y. Moon, Orient, N.Y.*

NEXT MONTH: **Math Short Cuts for the Home Owner**

WHETHER you're a whiz or a washout at mathematics, you'll find something of value in next month's bonus booklet, "Math Short Cuts for the Home Owner."

It's packed with tricks of a dozen trades for measuring, estimating and computing—the easy, time-saving way. Some of the tricks are so simple you'll be surprised you never thought of them yourself. But you *could* forget them again. So be sure to save the booklet. It's No. 6 in the Popular Science Reference Library. Watch for it—in the December issue.

The beautiful Edsel Citation two-door hardtop. All 18 models in the new Edsel line are equipped with Champion spark plugs.

Champion welcomes the Edsel to its distinguished roster of 36 great cars

It's a fact! With the addition of the Edsel—newest member of the Ford family of fine cars—36 great cars throughout the world now use Champions as standard equipment. This means more than twice as many cars use Champions than any other plug. Why? Because Champions give every car—including your car—full-firing power . . . all the power you paid for!

Short Cuts and Tips

Paper Insulation Helps Warm You

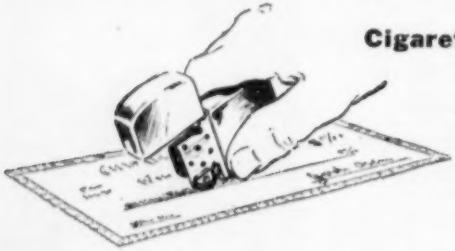
AN OLD hobo trick will keep you warm on hunting trips if the temperature drops unexpectedly. Fold several thicknesses of newspaper to reach from armpits to hips and slip it under your jacket. It will seal in body heat and act as a windproof insulation. Keep newspapers in the car trunk on overnight trips, too—handy to slip between too-thin blankets.—*M. O'Higgins, Arlington, Va.*

Paint Can Totes Brush Keeper

STRAP a tobacco tin to the paint can with a rubber band and you have a place to park the brush when it is not in use. Keep the tin filled bristle-high with paint-thinner. If it should leak at the bottom seam, flow thin glue around the bottom and allow it to dry before pouring in the thinner.—*Murray Kent, Detroit, Mich.*

Putty Cleans Sandpaper

IF YOU'RE down to your last sandpaper disk and it clogs up before the job is done, reach for a lump of weatherstrip putty. Press it over the disk, folding it frequently to present a fresh surface. The tacky putty reaches between the abrasive grains and cleans them out better than brushing.—*Ken Murray, Colon, Mich.*



Cigarette Lighter Protects Checks

CARRY a cigarette lighter with an exposed flint-sparking wheel? If you do, you are also carrying a ready-made guard for protecting your personal checks. Simply lay the checks on a flat surface and roll the wheel over the written amounts with just enough pressure to make perforations.—*John Comstock, Wellsboro, Pa.*

MoPar "Dated" Dry-Charge Batteries: their life begins the day you buy

Get a *factory-fresh* MoPar Dry-Charge Battery ... your warranted battery life begins the day you buy! MoPar batteries assure maximum power, reserve capacity, long life, compact dependability.

RIGHT! New improved MoPar Anti-Freeze comes to you with rust inhibitors, lubricants and other ingredients permanently blended to give you complete winter protection. Both All-Weather Permanent type and Methanol type exceed normal anti-freeze specifications. An official authentic Chrysler Corporation product, made to highest quality standards. Buy MoPar Anti-Freeze from your Plymouth, Dodge, De Soto, Chrysler or Imperial dealer, or leading repair shops everywhere. Get ready for winter now!

MoPar
PLYMOUTH · DODGE · DE SOTO · CHRYSLER · IMPERIAL
PARTS & ACCESSORIES

MOPAR DIVISION — CHRYSLER MOTORS CORPORATION
DETROIT 31, MICHIGAN

Short Cuts and Tips

Underfoot Signal Makes Stairs Safer

CARRYING large objects down to the basement used to mean counting each step so that I'd know when I had reached the bottom. But I don't have this problem any longer since I tacked a piece of soft carpet to the bottom tread. Now I can tell by feel and for sure when I hit the last step.—*J. A. Conrad, Erie, Pa.*

▶▶▶After burning my wrist on the hot muffler while making adjustments on my gasoline-powered mower, I added a guard. I spiraled heavy wire around the muffler and fastened it to the neck for support. There is enough space between muffler and wire to block most of the heat conduction.—*John A. Compton, Johnstown, Pa.*

▶▶▶Those spring-grip clothespins fitted with hooks for hanging them over a towel bar or a shower-curtain rod are just as handy in the shop for hanging stocks of sandpaper. Mark each pin with the grade of paper it holds and hook them over a wire clothes hanger near the workbench. —*E. B. Lillie, St. Petersburg, Fla.*

Drawer Rides Door Track

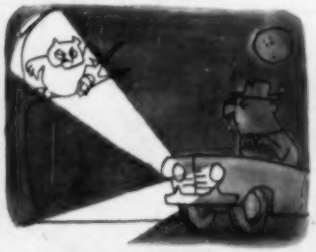
THE T track designed for use with sliding doors makes an excellent guide for cabinet drawers. The track is fastened to the bottom of the drawer and slides in a groove in a center rail below it.—*W. G. Waggoner, Sacramento, Calif.*

Sandpaper Labels Gallon Cans

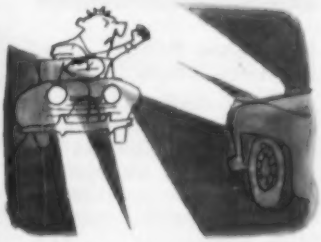
YOU can make non-slip labels for the handles of gallon cans from fine sandpaper. Cut a strip just wide enough to fit into the groove formed by the handle, arc it slightly and snap it in, abrasive side down.—*H. R. Colpe, Alexandria, Va.*

How to get more light on the road *from your present headlamps!*

1. Since headlamps are detachable, they are subject to road shock and vibration which can jar them out of position and mis-direct their light.

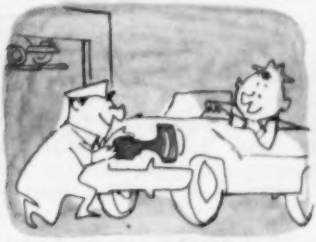


2. A very slight change in their position (so insignificant you can't even see the change) makes a big difference in the light you get down the road.

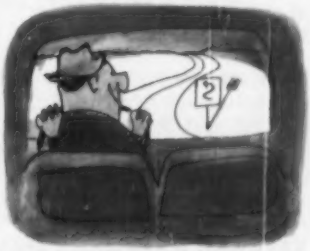


3. Ever have oncoming motorists "flash" their lights...believing you were driving with your "brights"?—when it was your *lower* beam . . . aimed high!

4. When headlamps are aimed low, the beam is too short . . . and you might not see in time to stop in time.



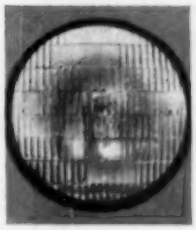
5. Your dealer can tell if headlamps are mis-aimed, and he can aim them accurately in minutes, even in daytime.



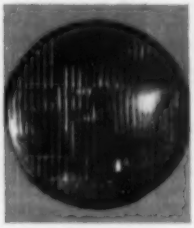
6. So, to get *more light* where it is needed . . . from your present headlamps . . . have them aimed *today!*

. . . and, if your headlamps are over 2 years old, here's how to get even more light!

Take a look at your *unlighted* headlamps. If they look like those at right, even re-aiming won't give you all the light you need. They should be replaced with new G-E All-Weather Headlamps that are all glass . . . their reflectors always stay shiny. When driving on the *lower* beam, G-E All-Weather Headlamps let you see better in fog, rain or snow and against the glare of oncoming traffic. Their *upper* beam reaches far and wide for safer driving on the open road.



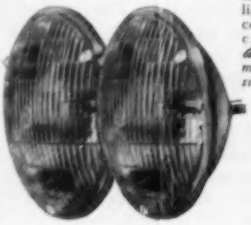
WATER DROPLETS inside the lens not only scatter the light, but they also help discolor metal reflectors. This can't happen with G-E All-Weather Headlamps—*moisture can't possibly get inside.*



DISCOLORED REFLECTORS absorb light rather than reflect it, causing a loss of up to 50% of the original light output. Dirt and moisture can never enter G-E All-Weather Headlamps so the *reflectors always stay shiny.*

BLACKENED BULBS in old-style headlamps block out the light from the filament and cause a dangerous drop in light output. This can't happen with G-E All-Weather Headlamps because *there are no inner bulbs!*

Get a pair of G-E All-Weather Headlamps today—and have your dealer aim them when he puts them in. You'll see the difference tonight. General Electric Co., Miniature Lamp Dept., Nela Park, Cleveland 12, Ohio.



Progress Is Our Most Important Product

GENERAL ELECTRIC

Short Cuts and Tips

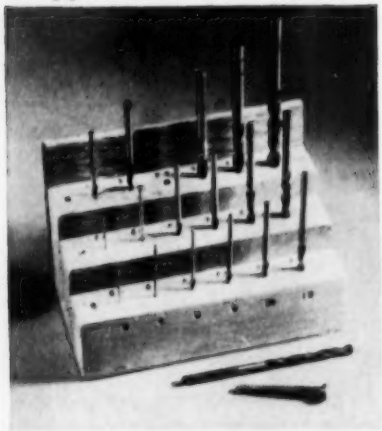
Hacksaw Blade Butters Tiles

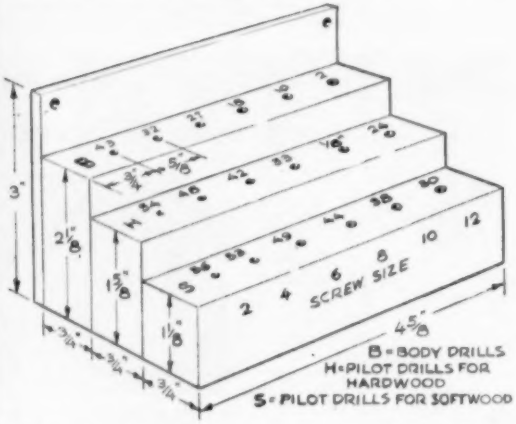
When replacing a few tiles or doing other small surfacing jobs, you can improvise a tool for spreading the mastic or other adhesive. Just slip a hacksaw blade between the jaws of a spring-grip paper clip. Rubber tubing, split to take the blade, will tighten the jaws of the paper clip.—*C. H. Willey, Penacook, N. H.*

▶▶▶Ever try crude oil to cover scratches on mahogany furniture? I apply a thin coating and let it stand for a few days before wiping it off. When the wood is polished, the scratches have disappeared. —*Mickey DeCato, Paterson, N. J.*

▶▶▶When removing fireplace ashes, it's a good idea to burn a wadded newspaper in one corner of the hearth. The rising hot air will draw the dust you stir up the chimney and keep it from blowing out into the room.—*R. Bauman, Somerset, Pa.*

Stepped Hardwood Rack Makes It Easy to Find Drill Bits

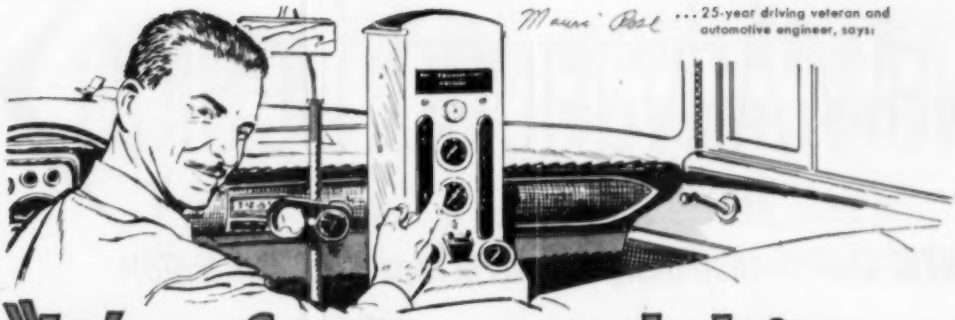




The selection of a drill bit is a cinch since I made this stepped rack for my shop wall. It consists of three blocks of maple backed with hardboard.

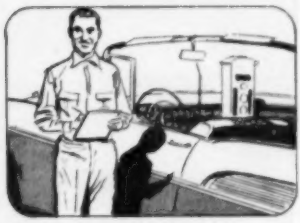
Before assembling the blocks, I drilled 1"-deep pockets for the bits. The hole for each bit was made with a bit of the next larger size. Then I nailed the center block to the block in front, and the rear block to the center one. Pre-drilled holes made it easier to drive 1¼" nails into the hardwood without hitting the storage pockets. I used ⅝" box nails to fasten on the back panel.

Letters and numerals impressed on the rack with steel stamps, then inked in, indicate the sizes and types of drill bits stored.—*Walter E. Burton, Akron.*



Maurice Rose ... 25-year driving veteran and automotive engineer, says:

"It's a fact...good drivers get good gas mileage"



"Here at the proving ground, we check fuel consumption right down to fractions of an ounce, under every kind of driving condition."

"We can actually measure the gas wasted by this kind of driving, with its unnecessary acceleration, needless stops and starts."

"Good driving—staying in lane, observing speed limits, and keeping alert at all times—can cut gas consumption by as much as 50%."

"Good drivers keep cars in good shape! Have your carburetor and other mechanical parts checked regularly by a trained specialist!"

Rochester carburetors are engineered to give you economical operation . . . quality-built to manufacture more miles from every gallon of gas!

Your Rochester Carburetor Specialist will help you enjoy top economy for the life of your car. See him regularly . . . he's a graduate of the finest service training available anywhere . . . he's worked with General Motors and United Motors Service experts . . . he's by far your best bet for low-cost, high-mileage maintenance!

Rochester carburetors are standard equipment for Chevrolet, Pontiac, Oldsmobile, Buick and Cadillac cars. Rochester Products Division of General Motors, Rochester, New York.

GM
GENERAL MOTORS
PARTS SALES
UNITED MOTORS SERVICE

ROCHESTER CARBURETORS

Specified as original equipment on more new cars than any other carburetor

New Advanced Design

NEW convenience-designed workshops YOU can build!

DELTA HOMECRAFT Power Tools are as accurate and easy to use as they are good looking. And in Delta's complete line of individual tools (most complete in the world) you'll find the tools that are exactly right for you—at terms exactly right for your budget. Above: "newest look in the world's finest power tools" shown in a Delta-designed "Dream Shop" that you can build in your home.

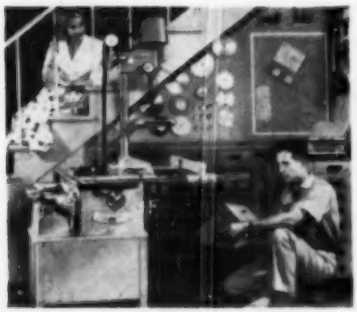
FREE WORKSHOP PLANS!

* Complete plans and step-by-step instructions for building the convenience-designed workshops shown above—plus complete bills of materials and a beautiful full color illustration of each shop to guide you in color selection.
* New Delta Workshop Reference Manual including complete details on New Advanced Design Delta Homecraft Power Tools.
* Catalog of famous Deltacraft workshop books.

ROCKWELL-BUILT

DELTA HOMECRAFT® POWER TOOLS

THE "NEWEST LOOK" IN THE WORLD'S FINEST POWER TOOLS



DELTASHOP—The practical combination of four, full-size tools—saw, jointer, drill press and sander. Does 95% of all workshop jobs, yet takes a space only 3 feet square! Shown in specially designed under-the-stairs shop.

DELTA "900"—most powerful All-Purpose Radial Saw workshop tool ever built for home use. Shown in compact shop you can build in basement or garage. Notice Delta Dust Collector which you can use with any power tool.

featuring exciting new styling by Raymond Loewy Associates, Inc.

Only Delta could bring you power tools like these! They're modern as tomorrow, with new convenience . . . new safety . . . new built-in skill . . . and new, clean, modern lines that reflect Delta's advanced engineering and quality craftsmanship.

Only Delta—with its unmatched power tool experience—could bring you the three workshops at the left, shops as modern as the New Advanced Design power tools shown in them! Mail the coupon for *free* plans, then build the shop that fits *your* space requirements. And *see* these wonderful new power tools at your Delta Dealer (listed under "TOOLS" in the Yellow Pages) or at leading department, hardware, and building supply stores. Ask about convenient terms to suit you.

Yes, *only* Delta could bring you workshops designed to fit *your* home and tools to fit both your needs and your budget. Why take less than the best when it's so easy to own New Advanced Design Delta Power Tools!

Delta Power Tool Division, Rockwell Manufacturing Co.
504L N. Lexington Avenue, Pittsburgh 8, Pa.

Yes! I'd like to receive the FREE Delta Workshop Plans for: ☐ Under-The-Stairs Shop ☐ "Dream Shop" ☐ Radial Saw Shop plus other materials mentioned.

Name _____

Address _____

City _____ County _____ State _____

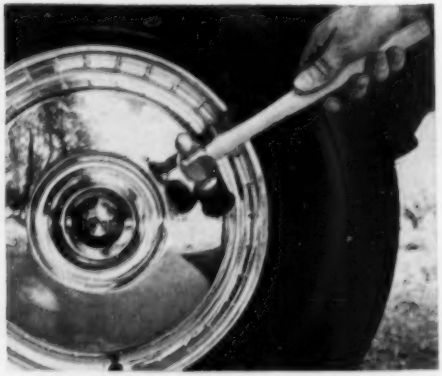
DELTA ROCKWELL

another product by **ROCKWELL**

Short Cuts and Tips

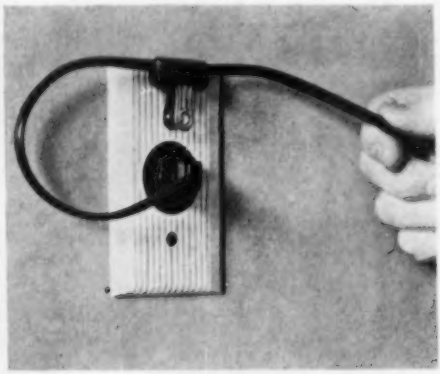
Flash Puts Light on Fuse Box

WHEN a fuse blows, there's light where you need it if you keep a penlight near the fuse box. A tool clip fastened to the box, or to a wall at the head of a cellar stairs, will hold it in an easy-to-reach position. Check the flashlight every few weeks to make sure that it's in working order.—*R. M. Woodson, Boston, Mass.*



Rubber Softens Hammer Blow

IF YOU reach for a hammer to tap a stubborn hub cap into place, there's always the possibility of marring the surface. To protect the cap, cushion the head of the hammer with a rubber crutch tip.—*Nels Olson, Washington, D. C.*

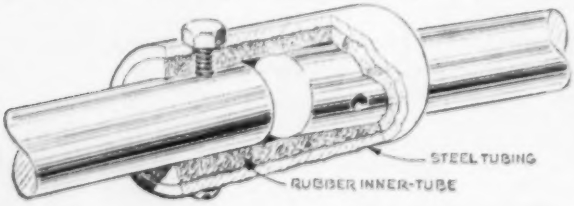


Clip Anchors Appliance Cord

THE cord of a vacuum cleaner or other appliance won't pull loose from a wall outlet if it is clamped in a heavy-duty paper clip. Fasten the clip to the wall plate with one of the plate's mounting screws.—*O. A. Nelson, Seattle, Wash.*

Tubing and Rubber Serve as Flexible Coupling

WHEN the flexible coupling between the motor driveshaft and the reduction gear shaft on our washer wore out, a piece of steel tubing about 3/8" larger than the shafts served as a replacement.



I wrapped inner-tube rubber around the shafts to pack the space between them and fill the steel tubing. Then I forced the tube over the rubber packing. Holes to match these already in the shafts were drilled at right angles through tubing and rubber to take the connecting bolts.

The connector works like a universal joint, and the rubber cushions any slight flexing caused by misalignment of the shafts.—*Rex Bush, Columbus, Ohio.*

These men chose their schooling— so can you!

Pvt. Robert K. R. Smith
Washington, D.C.
Graduate Woodrow Wilson High School

"I took the exact Radar course I wanted, thanks to the Army's technical training program for high school graduates. Now I'm working in electronics. You can pick an Army course that fits your interests, too—and only the Army guarantees you the training you want before you enlist. So if you want to be sure you get what you want, you ought to see your Army Recruiter and find out about this terrific program."

Pvt. Max LeBlanc
Lake Charles, Louisiana
Graduate, LeGrange Senior High School

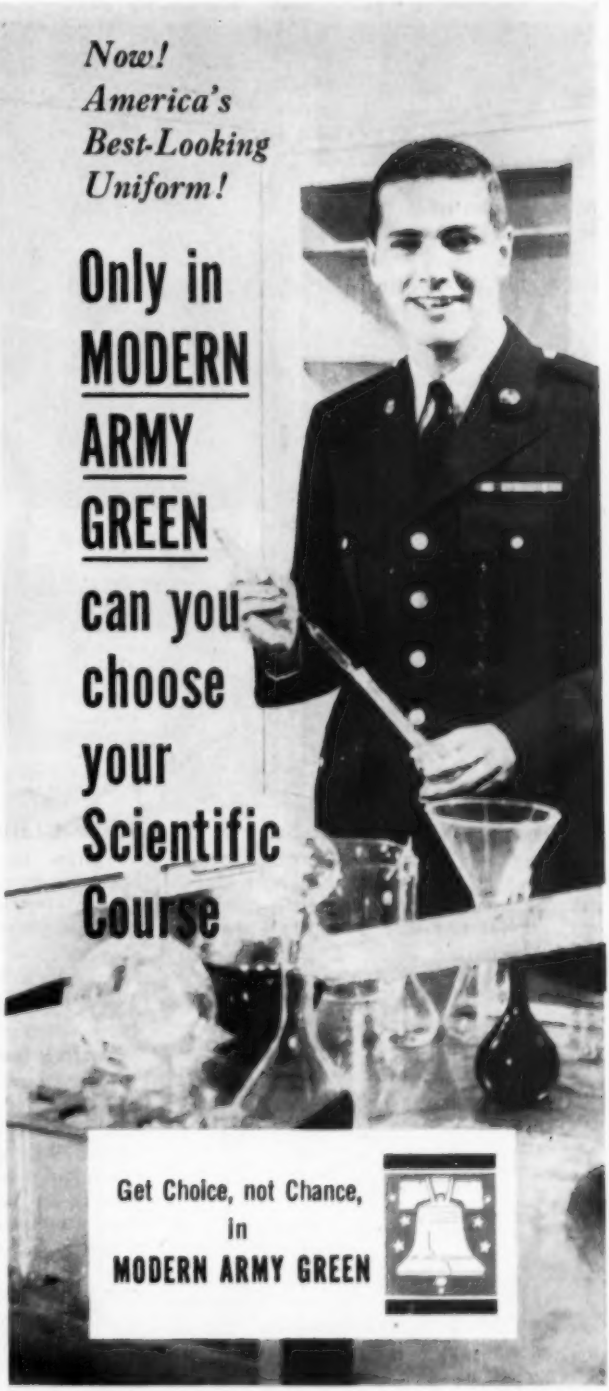
"I had heard that the Army would let me pick the training course I wanted, but I was surprised to find they offered over a hundred different courses—and every one is guaranteed for you *before* you enlist. I chose Drafting and got really valuable training. You can find an Army course that will suit you, too. I'd suggest you see your Army Recruiter, because only the Army gives you your choice of technical training."

Seniors—get all the details on how high school graduates can choose their technical training before enlistment from 127 modern courses. Mail this coupon for your free booklet today. Or for immediate counseling visit your local Army Recruiter. He's listed in the phone book and will give you all the facts—at no obligation!

THE ADJUTANT GENERAL PS-11-57
Department of the Army
Washington 25, D. C.
Attn: AGSN

Please send me the free Army booklet telling how high school graduates can choose their technical training before enlistment in Modern Army Green.

Name .....
Address .....
City ..... **State** .....
Date of Graduation .....



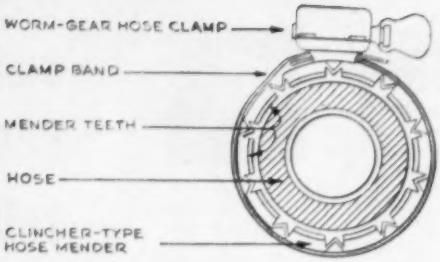
Short Cuts and Tips

Music Stand Holds Binoculars

BIRD watchers, rifle-range fans and other binocular users will find a music stand a good steady rest for the glasses. Tip the rack to a horizontal position and lower the height of the stand so that the rack holds the binoculars at a comfortable eye level.—*R. M. Woodbury, Natick, Mass.*

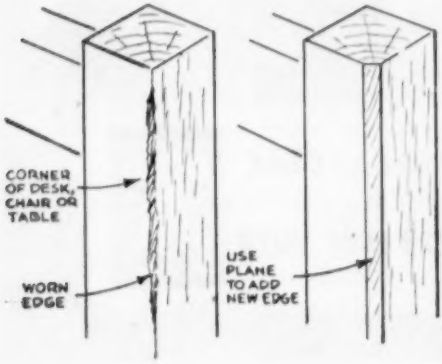
Staple Anchors Wood Screw

TO KEEP a wood screw from working loose once it's turned tight, drive a staple into the wood so that it straddles the head of the screw and then pound it down into the screwdriver slot. The staple will lock the screw so securely that it can't turn.—*John A. Coombs, Philadelphia.*



Hose Clamp Serves as Tool

WHEN my garageman's car-washing hose sprang a leak, he used a worm-gear hose clamp as a tool to attach clincher hose menders and couplings. Tightened around the mender teeth, the clamp forced them to grip the hose uniformly. —*Bruce D. Stewart, Winder, Ga.*



Planing Re-edges Old Furniture

BEFORE refinishing furniture that has had hard use, check the edges of desks and cabinets and the legs of chairs and tables. Where they show splintering or excessive wear, plane off the corners to provide a new surface. With a little care, you can do the same job with a chisel and sandpaper block.—*F. J. Shore, NYC.*

▶▶▶ADD a few drops of food coloring to wallpaper paste. When you brush it over the paper, you can see at a glance whether it is spread evenly and without missed spots.—*R. Bauman, Somerset, Pa.*

NEW! MILLERS FALLS Router-Plane-Shaper

WITH REVOLUTIONARY NEW LINE OF LOW-COST ROUTER BITS

3 TOOLS IN 1

Imagine! — an exciting new 3-tools-in-1 combination loaded with exclusive features to give professional results — yet priced to bring the adventure of fine cabinet-work within reach of everyone! It's a Router, a Plane, a Shaper! — that will do hundreds of jobs quicker and better — including dado cuts, moldings, fluting, rabbet cuts, dovetail joints, inlaying, planing and shaping. A real precision tool with plenty of power and speed, that anyone can use!

Plus . . . a revolutionary new line of 17 popular Router Bits, made of Special M-2 High Speed Steel — faster, longer-lasting — at 1/3 less cost than other types.

See and buy the Millers Falls Router-Plane-Shaper and its complete line of attachments at your favorite dealer's . . . or write us for name of qualified dealer nearest you.

CHECK THESE IMPORTANT FEATURES

POWER UNIT ✓ Rugged 3 amp. motor ✓ Ball bearings throughout ✓ 30,000 R.P.M. for smoother, faster, cleaner cutting

ROUTER ✓ Large 6" dia. base and big hardwood handles for positive control ✓ Direct-reading scale for fine depth adjustment ✓ Exclusive micrometer-screw adjustment for control of cut location ✓ Extra long rods for long reach cuts ✓ Base and non-marking sub-base take all popular templet guides

PLANE ✓ Big 14" shoe ✓ Outboard arbor support ✓ Micrometer-screw adjustment for front-to-rear shoe and cutter alignment ✓ Direct-reading depth adjusting scale ✓ Notched quadrant for quick bevel cuts (−15° to +45°)

SHAPER ✓ 1/3 cost of comparable models ✓ Big work surface (24" x 7½") ✓ Built-in motor mount for quick, easy changeovers ✓ Accurate depth adjustment ✓ Adjustable fence ✓ Rugged 1" marine plywood table

Plus . . . a special "package" of exclusive firsts for plastic laminate application!

FREE AT YOUR HARDWARE DEALER'S
Folders and full information about the Router-Plane-Shaper and other fine Millers Falls Tools . . . or write

MILLERS FALLS TOOLS SINCE 1868

MILLERS FALLS COMPANY
Dept. PS-21, Greenfield, Mass.

FINEST HAND AND POWER TOOLS MADE FOR HOME AND INDUSTRY

Need oil control?

Sealed Power's got it!

KromeX ring set with new Stainless Steel Oil Ring permits performance never before possible.

Even under high vacuum condition such as deceleration, Sealed Power's Stainless Steel* Oil Ring controls oil, eliminates smoking. This ring will not sludge or corrode because of the characteristics of stainless steel. And it has chrome-plated steel side rails for more than double normal ring life. They seat instantly.

OTHER UNIQUE FEATURES

Sealed Power's Stainless Steel Oil Ring holds full tension at engine operating temperatures. Judged by either your pocketbook or car's performance, Sealed Power's KromeX Ring Set with the Stainless Steel Oil Ring is your best buy.

GET THIS FREE MANUAL

An illustrated manual on engine care—free, yours for the asking. "Care and Feeding of Engines" is highly informative, could save you a lot of maintenance expense. For your free copy, write Sealed Power, Dept. H-11, Muskegon, Michigan.

*U. S. Patent No. 2,789,872

Sealed Power

PISTON RINGS

BEST IN NEW CARS! • BEST IN OLD CARS!

Buick: New Look, New Transmission

[Continued from page 112]

zoomed and cars grew heavier, braking became more critical. A careless driver could find himself faced with brake fade, caused by the heat of excessive brake use.

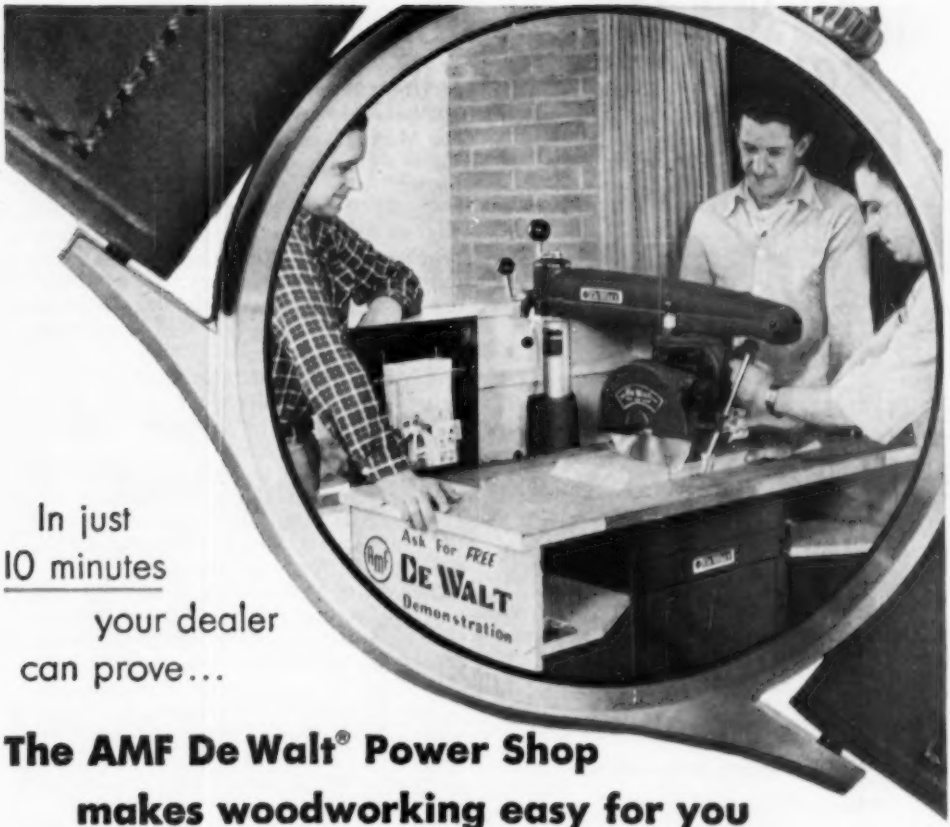
Last spring a team of five drivers began cruising the Los Angeles high-speed freeways in Buicks equipped with experimental brakes. Each man accelerated and braked for 200 miles a day, doting on the tough morning and evening rush-hour traffic. In the end they proved out what a program of proving-ground runs had also shown: that finned, bimetal brake drums did a fine job in pushing back the threshold of fade. The wear surface inside the drum is still cast iron, for durability and smooth performance; the finned aluminum housing outside acts to dissipate braking heat to the air.

The new bimetal drums are fitted only to the front wheels (where the bigger part of the braking effort occurs). The rear drums remain plain cast iron. All but the Special series of Buicks—which are the lightest ones—will come with the new drums installed.

Two Dynaflows. They have done something else about downhill braking. A new Dynaflow version, with three instead of two turbines, is rigged so that in one selector position it provides a handy degree of downhill retardation. Its selector quadrant reads P R N D G, with the "G" standing for Grade Retarder. Students of corporate lineage will spot the kinship to Chevy.

The regular twin-turbine Dynaflow, with a P N D L R quadrant, has been refurbished too. Up to this year its "variable pitch" stator has actually had only two positions, high and low. Living up to its name, the stator is now capable of an infinite number of pitches, depending on accelerator position. From a driver's viewpoint the car responds more sensitively to accelerator command; it no longer first lags and then leaps convulsively as the pitch is switched.

Big one gets bigger. For 1958, Buick has a new line of cars. To the Special, Century, Super, and Roadmaster there is added the Limited 700. It's basically the same as the Roadmaster 75 unveiled last spring, except that it's eight inches longer. The locomotive echo in the name seems apt.—*Devon Francis.*



In just
10 minutes
your dealer
can prove...

The AMF De Walt® Power Shop makes woodworking easy for you

SEE Safer, easier top-side cutting

SEE Direct-drive power, no belts, no pulleys

SEE De Walt's exclusive safety features

SEE Layout marks visible every cut, no mistakes

SEE Work moves straight—saves 75% floor space

SEE De Walt becomes 12 professional tools in 1

See for yourself why DeWalt's original radial arm design, big capacity, and unsurpassed accuracy make it the finest, most valuable all-purpose power tool you can own.

Your dealer will quickly show you how a DeWalt saves the cost of a shop full of tools – makes all home woodworking fast, easy, safe . . . fun! How you can make furniture, build in cabinets, finish off the attic or basement, make home repairs . . . do all those things you've always wanted, *even if you've never used a power tool before!*

See your Franchised DeWalt Dealer for a Free, *convincing* demonstration today! Easi-Budget Terms – 10% down, 2 years to pay!

Owners! Send for valuable new De Walt Woodworking Manual, just $3.95 pp.

Send the coupon for free booklet and name of nearest De Walt dealer.

Another AMF Product
DE WALT POWER TOOLS

De Walt Inc., Dept. PS-711 Lancaster, Pennsylvania
Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY

☐ Send FREE colorful 20-page Booklet and name of dealer.
☐ I enclose $3.95 (check or m.o.) for De Walt woodworking manual.

Name _____
Address _____
City _____ Zone _____ State _____

ALL-NEW 1958 *POWR-KRAFT* POWER TOOLS

Styled for the Home Workshop

Free

NEW 52-Page 1958 Catalog

PRECISION ENGINEERED

DESIGNED TO GIVE YOU

- **New Modern Appearance**
- **New Greater Capacity**
- **New Exclusive Features**

See them at your nearby Ward Retail Store, or send coupon below for catalog.

EXCLUSIVELY AT

Montgomery Ward

MONTGOMERY WARD, Dept. WC-PS11

Chicago 7, Ill. — Baltimore 32, Md.
Albany 1, N.Y. — St. Paul 1, Minn.
Denver 17, Colo. — Kansas City 11, Mo.
Portland 10, Ore. — Oakland 16, Cal.
Ft. Worth 1, Tex.

Please send Wards Free Power Tool Book.

Name.....
(Please PRINT Plainly)

Street Address or Route and Box No.....

Post Office..... State.....

Lincoln: World's Longest Car

[*Continued from page 116*]

the bigger of the heavy-muscled Edsel engines (PS, Sept., p. 242). The holes for the pistons are just bigger.

The car's styling borrows a bit from the Mark II, as does the plushiness of its interior fittings. Some sheet-metal "sculpturing," like that in the Edsel, Oldsmobile and Buick, has been done. (Jaded Detroit critics describe this bit of engineering as predenting the fenders.) The four-eyed headlights are canted, as though one of the car's forebears was Oriental. There are tail fins, but they're skimpy, like the Ford's.

Whatnots abound. The antenna, for instance, automatically goes up or down whenever you reach over and turn the radio on or off.

So the Lincoln, at long last, steps into the company of the Imperial and the Cadillac. It has been upgraded toward the Continental. The Continental, by the same token, has been downgraded.

The death of the Mark II leaves a sadness pervading the great new factory. In the plant garage, the last of the Mark II's off the production line stand regally aloof from the goings-on. The sales target for the car at its introduction in 1955 was 3,200 vehicles. Ford Motor sold 3,000-odd. Asked why the car had had so brief a life-span, a Lincoln sales executive said:

"I guess it was because the buyers got finicky. When they spent $11,000 for a car, they wanted this changed and that changed, and customizing just got too expensive."

For Detroit, simple elegance is too costly a luxury.—*Devon Francis.*

Playback Method Works Brain

THERE'S a natural kind of tape recorder built into your head, reports Dr. Wilder Penfield of the Montreal Neurological Institute. With gentle electric current he stimulated certain brain cells during surgical operations on patients conscious under local anesthesia. They reported "playbacks" of long-forgotten conversations, songs and the like.

Dr. Penfield theorizes that every experience—sight, sound, smell, taste—registers as a particular pattern in the brain. The pattern stays on, long after the experience seems to be forgotten.

How to fit two boys into one room ...and keep 'em quiet, too!

Put two boys together and they're bound to have fun . . . and bound to make noise, too. But here's a dandy sound-conditioned room that lets 'em roughhouse all they want – yet hushes the noise they make. You can build a room like this yourself . . . even if you're no expert with a hammer and saw. It's easy to do, and costs less than you think. Here's how.

For the ceiling, use Gold Bond Decor Tiles – in the handsome new Jackstraw pattern (shown above). They're attractive, inexpensive, and make rooms pleasantly quiet – tiny spaces between the wood fibers actually soak up disturbing noises. Just nail or staple tiles to wood strips applied right over your present ceiling.

For the walls, use Gold Bond® Gypsum Grainboard Decorator Panels and Insulation Tiles. Decorator Panels come in four exciting woodgrain finishes, plus Knotty Pine. Go up in a jiffy, too. Saw panels like wood, or score with a knife and snap. To clean, just wipe with a damp cloth. Insulation Tiles come in rich ivory white, and can be painted if you like. Their interlocking edges hide nails or staples.

Want plans so you can start building? Write for free illustrated folder, "How to Remodel Your Attic," to National Gypsum Company, Dept. PS 117, Box 73, Buffalo 13, N. Y. Then see your local Gold Bond dealer. He'll supply everything you need – including helpful advice.

Gold Bond
BUILDING PRODUCTS
NATIONAL GYPSUM COMPANY

OPERATION Better Your Living HOME IMPROVEMENT

?? SHOP QUIZ ??

Question 1

What's the **EASIEST** way to drive wood screws?

Question 2

What's the **EASIEST** way to remove wood screws?

Question 3

What's the **EASIEST** way to run nuts or bolts on or off?

Question 4

What's the **EASIEST** way to use heavy-duty cutting tools like hole saws, masonry and auger bits?

WITH YOUR ELECTRIC DRILL AND A

Supreme Versamatic

Reversible speed reduction attachment that fits every power drill. Increases power 7 times. Reverses with one simple twist. A *must* for every drill owner.

$14.95 AT LEADING TOOL COUNTERS

By the makers of SUPREME BRAND CHUCKS

SUPREME PRODUCTS CORPORATION
2222 S. Calumet, Chicago 16, Illinois
A Division of A•S•R Products Corporation

How Good Are the New Picture Tubes?

[*Continued from page 148*]

130 or 135 degrees is the next step. This would cut three or four inches off the length of a 21-inch tube, make the set fit in an ordinary bookcase.

2. A 150-degree tube is more difficult but not impossible. It would save only about two more inches, though. And it is as far as you could go with the present kind of cathode-ray tube.

3. Several types of 180-degree tubes are being toyed with for military uses. A deflection of 180 degrees sounds impossible but isn't—you bend the electron beam into a U turn, then use other circuits to scan it across the screen. The trouble is that these "other circuits" look hopelessly complicated.

4. A solid-state picture "tube" would eliminate the vacuum, electron beam and electron gun. It would be flat—a picture on the wall.

The 130-degree tube looks like a commercial possibility for 1961 or thereabouts. The 150- and 180-degree jobs may never get into your house because the more-promising solid-state screen should be ready first.

The solid screen is a flat piece of glass coated with phosphors that glow when excited by an electric field. If you imbed a crisscross network of wires in the glass, you can make the electric field different at different points on the screen and create varying patterns of light and dark—a picture. Screens like this are already used to display numbers on electronic computers.

The numbers on computer display screens don't have to change very fast, so this scheme works fine. Television is another story. The electric field at each point in the screen would have to change more than 1,000,000 times per second. You would have to switch from one wire to another that fast. This is impossible with mechanical switches. You could do it with an electron beam—and that puts you right back to a cathode-ray tube.

One possible solution is a compromise. Use the solid screen to present the picture. Use small, inconspicuously mounted cathode-ray tubes to do the switching.

Best estimate for putting the flat TV screen in your home: middle Sixties.

The world on your wall. Once they get the bugs out of that flat screen, TV

The Secret of Scratch-free Sanding!

Ask any expert—the secret of a perfect finish is to *sand with the wood grain!* That's what the old-time craftsman did when he sanded by hand. And so do you, when you use a Dremel Straight-Line Action Sander—except that a powerful motor does all the work.

With Dremel Straight-Line Action, you leave no cross-grain scratches or orbital swirl marks to mar the finish of your project.

Dremel sanders are compact, lightweight, and easy to grip and handle. Don't be fooled by "look alikes" or "looks" alone. Ask your dealer for a demonstration. Then compare their price, performance, and ease of handling. You're sure to pick a Dremel—and you'll be glad you did.

See Your Power Tool Dealer Today

Dremel Straight-Line-Action Power Sanders—3 popular models—$14.85 to $37.50

FREE Power Tool Catalog on the Complete Dremel Line. Write today!

Quality Power Tools Since 1934

DREMEL MFG. CO., Dept. 127L, Racine, Wis.

ELECTRIC DREMEL POWER TOOLS

Make $20 to $30 a Week EXTRA MONEY!

With the high prices of food, clothing and everything else, just think what you could do with extra money every week! Turn your spare time into CASH—sharpening saws with a Foley Automatic Saw Filer pays up to $3 or $5 an hour. Start in your basement or garage—no experience necessary. "The first saw I sharpened with my Foley Filer came out 100%"—writes Clarence E. Parsons. No canvassing—"I advertised in our local paper and got in 93 saws"—says M. L. Thompson. With a Foley you can file all hand saws, also band and cross-cut circular saws.

FREE BOOK
Shows How To Start

It explains how you can get business from home owners, farmers, carpenters, schools, factories, etc. "I get work from 20 and 30 miles away"—says Charles H. Smith. Free Book, "Money Making Facts," tells how to start. Send coupon today—no salesman will call.

Send Coupon for FREE BOOK

FOLEY MFG. CO.
1149-7 Foley Bldg., Minneapolis 18, Minnesota
Send FREE BOOK—"Money Making Facts."

Name .....

Address .....

New Starrett Tools for CARPENTERS BUILDERS HOME CRAFTSMEN

Lightweight Aluminum

AUTOMATIC CENTERING PUNCH

No. 819 centers screw-starting holes for hinges, latches, other hardware. Press down and it strikes. No hammer needed. Features lightweight sure-grip aluminum handle, self-centering locating sleeve, adjustable striking force, hardened steel point.

No. 92 9-INCH DIVIDER

Holds standard long pencil or steel point. Has long legs for wide range, fine adjustment for accurate setting. Heavy duty construction — legs won't wander on rough work.

No. 11-HC COMBINATION SQUARE

The indispensable multi-purpose tool. Tempered steel blade has accurate machine divided graduations. Square head has patented reversible lock bolt, built-in spirit level and scriber. Also available with center head. Sizes from 4" to 24".

Big New Catalog — FREE. Describes and illustrates over 3000 Starrett Tools. Send the coupon.

STARRETT TOOLS are carried by leading Industrial Supply Distributors and Hardware Tool Stores.

THE L. S. STARRETT COMPANY
Dept. PS, Athol, Mass., U.S.A.

Please send my free copy of the big new Starrett Catalog No. 27.

Name .....

Occupation .....

Address .....

City ..... Zone .... State .....

How Weldwood Old Craftsman Pine Plywood makes your woodworking projects easier

New, all-pine plywood gives you all the working advantages of *clear* pine lumber, *plus* the added strength of rugged plywood construction, and convenience of large panel sizes.

Old Craftsman pine is carefully selected, precision manufactured, and backed by the Weldwood name. Sizes and types to fit your needs. Clean working, smooth sanding, easy finishing, no waste. Try it on your next project. Ask your Weldwood lumber dealer.

SEND THE COUPON for Old Craftsman book. Step-by-step directions are a cinch to follow. A 50¢ value—only 25¢ with coupon below.

PROJECT #9 from the Old Craftsman book (see coupon) —*Early American Hutch* with planter bin in dry-sink. Make it with Old Craftsman Pine Plywood. Stain with Clear Firzite® plus colors-in-oil, and finish with non-yellowing Satinlac® You can paint Old Craftsman, too, and get beautiful results. Far less face checking and hairline cracking than with ordinary plywood.

SEND FOR PINE PROJECTS BOOK TODAY!

United States Plywood Corporation PS-11-57
Box 61, New York 46, N. Y.

Please send me my copy of your 96-page book, "Projects You Can Build With Weldwood Old Craftsman Pine Plywood." I enclose 25¢.

Name.....
Address.....
City.....**State**.....

How Good Are the New Picture Tubes?

will never be the same again. The screen on the wall suggests a far larger picture, home-movie size.

A jump to home Cinemascope would be a fundamental change, with far-reaching effects on the entertainment you could get. You would no longer feel that you were watching through a window. The frame around the picture would disappear from view and let you imagine yourself part of the picture, personally involved in the action.

The flaw in the big-screen idea is the TV image itself. It is made up of 525 separate lines with blackness in between. When the screen gets big, you see the lines and the picture breaks up, like a poor photoengraving in a newspaper.

Can you broaden the picture lines so the blackness in between disappears? Yes:

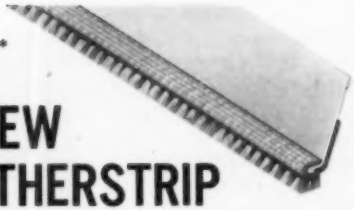
- The spot of light that traces the picture, now circular, might be made oval or better yet, rectangular.
- The spot could be wobbled up and down as it was moved sideways across the screen. Spot wobble is now used in some European receivers, and Westinghouse has recently publicized its research on the idea. Expect it to be tried, perhaps soon, on 24-inch receivers.

Real portables. A flat screen would be nice but not essential for a TV set that is truly portable—battery operated—and not just a table model with a handle screwed on. The first of these, trade rumors insist, will be out early next year. It will be partly transistorized, hoggish with batteries and expensive ($500-$600).

Why not fully transistorized portables, which would ease the battery problem? Ordinary three-buck transistors won't work at the high video frequencies involved in some TV circuits. There *are* high-frequency transistors now, but they're awfully hard to manufacture—you have to turn out a big batch to get a couple of good ones.

Another prospect for portable TV is Raytheon's new spacistor, which promises to work very well at high frequencies. The spacistor is a tiny crystal amplifier, like the transistor, but it uses an electric field to move electrical charges instead of letting them drift around (the electric field speeds the charges from one electrode to another, hence the ability to amplify high frequencies). END

DRAFTITE*



NEW WEATHERSTRIP

has unique pile that seals out costly drafts

No home insulation job is complete until doors are tightly sealed with DraftTite, the weatherstrip built like the kind used in cars to seal out drafts at high speeds.

DraftTite traps millions of dead air cells in tightly packed "piles" anchored in rubber on aluminum strips. Cold and wind can't penetrate. Lasts a lifetime, won't mat, deteriorate, buckle, harden or waterlog. Costs only $1.98 to permanently seal an average door frame, 69¢ for the bottom. Installs in minutes. At your hardware dealer's now.

*Trade-Mark

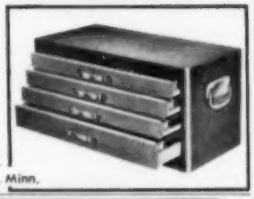
The Standard Products Co. LEXINGTON, KENTUCKY

Heavy Duty, All Steel

TOOL CHEST

$25.90 F.O.B. ST. PAUL

WHERE ELSE can you get 4 drawers with *built-in locking system,* sliding on compound glides —at this price! Baked blue-gray enamel. 26" x 12½" x 12½". Your money back if not satisfied! *Write for bulletin, describing this and 12 other models.*



HUOT MANUFACTURING CO.
532 No. Wheeler St., St. Paul 4, Minn.

It's Self-Gripping

CHANNELLOCK ®
No. 410
HEAVY-DUTY PLIER

How's this for gripping power? You won't know your own strength 'til you grab hold with this heavy-duty self-gripping plier. The Channellock No. 410 HEAVY-DUTY is actually a combination plier-wrench . . . and it will get into tight places you can't reach with a pipe wrench. A mighty handy, multi-purpose tool with four jaw adjustments up to 1-1/8".

ASK YOUR TOOL SUPPLIER FOR A CHANNELLOCK No. 410 HEAVY-DUTY PLIER

BE SURE IT'S A GENUINE CHANNELLOCK

LOOK FOR THE TRADEMARK ON THE HANDLE

CHAMPION DeARMENT TOOL COMPANY
MEADVILLE, PENNSYLVANIA

LUFKIN

MITI-MITE

MAGNETIC BASE TOOLS SAVE TIME AND TEMPER

No. 102A

A new Indicator Holder with a rigid post centered over point of greatest magnetic pull . . . holds even heavy lug-back type indicators securely in position. Newly designed base contains a permanent magnet with an unbreakable plastic outer shell. Base attaches instantly to curved or flat ferrous surfaces. Has a fine adjustment feature. Ideal for all set-ups requiring the use of an indicator.

MITI-MITE Magnetic Base SURFACE GAGE

A new heavy duty surface gage and indicator holder that has greater range and capacity. Permanent magnet can be turned on or off for easy positioning. Fully adjustable spindle and fine adjustment screw. New-designed scriber has a removable, long wearing carbide tip.

No. 301B

MITI-MITE Magnetic Base HOLD DOWNS

For securely holding precision work without use of blocks, shims, parallels, etc. Swivel mounted in polished aluminum plates containing two permanent magnets.

No. 903D

MITI-MITE Magnetic Base FLUORESCENT LITE with Magnifier

Portable, high intensity lighting coupled with a magnifier. Lamps light instantly, operate at body temperature, are protected by chip shield. Adjustable goose neck with full swivel. Strong permanent magnets in base with fingertip release for quick relocating.

No. 350X

488

WRITE FOR FREE MITI-MITE BOOKLET

BUY LUFKIN TAPES • RULES • PRECISION TOOLS AT YOUR HARDWARE OR TOOL STORE

THE LUFKIN RULE COMPANY, DEPT. PS, SAGINAW, MICHIGAN

The Journey No Man Has Ever Made

[Continued from page 151]

Hillary has been equipped with tractors, but he has also been working, in the mountains and glaciers, with men and dogs instead.

Hillary and Fuchs plan to meet about 500 miles inland from the Pacific. If and when they bring it off, it will be the most dramatic meeting since that of Stanley and Livingstone in Africa in 1871. It will be even more lonesome: None of the several thousand men, in the many Antarctic expeditions of this International Geophysical Year, will be anywhere nearby.

It will also be a reunion of Everesters: Hillary will shake hands with George Lowe, who was with him on the team that tackled Everest, and who is crossing with Fuchs. The reason for Lowe's presence: On trips in 1955 and 1956, to find from the air a possible route, Fuchs kept finding, instead, previously unknown mountain ranges.

Major supply bases, 300 miles inland from each end of the route, were established in 1956-7, to help make the worst journey in the world better in 1957-8. In addition, both Fuchs and Hillary will be supported by air: When the weather permits, Auster and De Havilland Otter planes will fly over both parties, radio information about the route ahead, and drop supplies (especially fuel for the Sno-Cats). Except at the Pole, it is doubtful that the planes will be able to land anywhere along the route.

All supplies needed were taken down in the winter of 1956-7 (the Antarctic summer) just in case this year's supply ships can't get through. Despite his careful arrangements, though, Fuchs still comments: "Plans may have to be modified in the light of what we shall actually encounter." The wind, which blows constantly with a velocity more than twice that of any other continent is a big reason: It can, even in the polar summer, bring a nine-day blizzard (like the one that killed Scott) at any time. In the summer it can also bring a warm blizzard: a storm with the temperature barely above freezing, when the snow and ice turn into a conglomeration of water and slush, and swallow up mechanized vehicles and even sleds.

In any one of those unknown 1,900

Buy Southern for **top Quality by USA standards.** Southern makes every screw it sells to rigid specifications.

Buy Southern by the box to save money. End worrisome trips for driblet purchases. "EZ-to-C"© label identifies size, head, and finish instantly. Southern screws are available at your hardware dealer or building supplier. In steel, brass, silicon bronze, aluminum, stainless steel. Standard plated finishes, from 3/16" to 6" in size.

Write today for your FREE Southern TC-4 folder showing how to select and use proper size screws, and how to drill pilot holes. Ask for your FREE copy of: "How They Make 10 Million Wood Screws a Day," reprint of *Popular Science* story. Box 1360—Write: PS117, Statesville, North Carolina.

WOOD SCREWS • MACHINE SCREWS • TAPPING SCREWS • DOWEL SCREWS • DRIVE SCREWS • STOVE BOLTS • CARRIAGE BOLTS • HANGER BOLTS

Warehouses:
- NEW YORK
- CHICAGO
- DALLAS
- LOS ANGELES

Southern SCREW COMPANY
STATESVILLE • NORTH CAROLINA

Sold Through Leading Wholesale Distributors

ONE-MAN SAWMILL LOW AS... $50.00 DOWN

Take BELSAW Portable Sawmill right to the trees—turn out valuable lumber for home and farm — sell to local yards — make up to $50 a day custom sawing for neighbors. BELSAW lasts a lifetime. No crew needed. Power with tractor or auto engine. Beginners get excellent results. Send today for FREE BOOK.

FREE BOOK

BELSAW MACHINERY CO.
3478 Field Bldg. Kansas City 11, Missouri

---

3 CU. FT. MIXER DIRECT FROM MFR. 39.75

Fills long felt need for small mixer for concrete, feed, fertilizer, seed and many other materials. Saves ½ cost of ready mixed concrete. Pays for itself on first job.

3 Cu. Ft. Drum—Mixes 2 Cu. Ft. Concrete $39.75
5 Cu. Ft. Drum—Mixes 3 Cu. Ft. Concrete 99.50

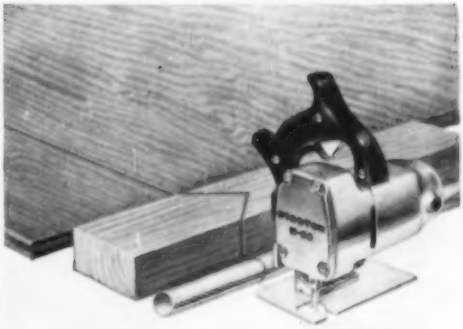
FOB Pulaski, N. Y. Cash, Check or M. O. Money back guarantee.

UNITED STATES FORGE AND FOUNDRY CO.
CONSTRUCTION EQUIPMENT DIV. PULASKI NEW YORK

KING MIDGET

ALL NEW. First model change in six years. New bodies, new chassis, new engine. Four wheel hydraulic brakes. Still World's Lowest Priced Car. Drive it for 75c per week. Rider Agents Wanted. Earn your own car. Get the facts. Send 25c for 32 page picture book with complete details, dealers price, etc.

MIDGET MOTORS CORPORATION, Athens 2, Ohio



DISSTON PRESENTS:

A 5¼ Pound Electric Hand Saw that cuts Metal, Wood, Plastic

The D-23 Electric Hand Saw brings you entirely new features in fast, versatile cutting for home workshop or professional jobs. Tests prove the D-23 from 15% to 50% faster than competitive saws, whether cutting in wood, metal or plastic. And it's made by DISSTON, a famous name in saws for more than 100 years. Only **$98.50**

"ORBITE" Action gives the DISSTON D-23 Electric Hand Saw its fast, clean cut and reduces blade wear. The blade has an orbital motion (3,800 strokes per minute). It cuts on the up-stroke, moves away from the material on the down-stroke. The result is less fraying of edges, truer cuts on circles, scrolls, straight lines or bevels. Extra, easy-to-change blades and detachable electric cord come with the saw.

H. K. PORTER COMPANY, INC.
Henry DISSTON DIVISION

FREE BOOKLET. **Mail this coupon today for an illustrated booklet outlining many more convenient and exclusive features of the DISSTON D-23. Instructions tell you how you can get the most out of your electric hand saw.**

H. K. PORTER COMPANY, INC.
Henry DISSTON DIVISION
411 Tacony, Philadelphia 35, Pa.
Please send me the FREE booklet about the new DISSTON D-23 Electric Hand Saw.

*Name*_____

*Street Address*_____

*City*_____ *Zone*____ *State*____

Stop wasting money on worn-out piston rings!

You can't see the wear on your piston rings. But you can feel it—in your engine's loss of power—and in your pocketbook.

At the first sign of oil-pumping, smoking exhaust or loss of power, ask your motor specialist for a ring check-up. If your car needs new rings, you'll be money ahead on gas and oil . . . and avoid big repair bills later on by installing new Hastings Piston Rings now.

They stop oil-pumping, seal compression and provide the special lubrication worn engines need.

Don't gamble with the power and economy that are built into your engine. Restore it, keep it, enjoy it. Get new rings. And be sure they're Hastings—the only rings engineered exclusively for replacement service in your car. Truly the best money you can spend on your car.

HASTINGS
Piston Rings

HASTINGS MANUFACTURING CO. • HASTINGS, MICH
Piston Rings, Casite, Wear Reducer,
Oil Filters, Spark Plugs

miles, too, Fuchs can run smack into a place like the one Amundsen named the Devil's Battlefield. Here, said Amundsen, "the ice was so ground and broken that there was positively no place where one could set foot. It looked as if a battle had been fought . . . with blocks of ice for ammunition. They lay pellmell, on top of one another, in all directions, and evoked a spectacle of violent confusion." He said it was necessary to travel 10 yards from side to side to advance one yard through this chaos.

Here, too, Amundsen had to guide his laden sleds cautiously down ribbons of ice, with yawning chasms on each side of the ribbons.

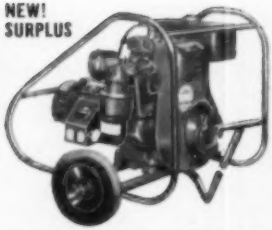
If they do become the first men to overcome conditions like these and cross the Antarctic, Fuchs and company will have to scramble fast, next March, to board their ship, the Magga Dan, and get out before winter sets in and keeps them there another whole year—nothing to look forward to after what they will have been through.

If they make it, what then? Sir Raymond Priestly, the man who rode in that touring car with Shackleton 49 years ago, is today president of the British Association for the Advancement of Science. One of those who believes uranium and/or gold, silver and platinum is going to be found in the Antarctic, he conjures up a vision of a new California or Alaska gold rush—only colder and windier. He foresees a horde of individual wealth-seekers swarming in.

These—perhaps the hardiest of all prospectors to date—would be armed with Geiger counters and mine detectors, equipped with sleeping bags, windproofs (and long johns), and would be sure of themselves because of the information and maps brought back by Fuchs and his lads.

The only thing needed to touch off the rush, Sir Raymond feels, is the actual location of mineral wealth in the Antarctic. "Then, once a footing has been obtained," he says, "anything can happen in these days of technological man." Thus the 11 adventurous men who are now making the worst journey in the world may be only the forerunners of thousands more who will someday be taking the trip in their footsteps. END

NEW! SURPLUS



WISCONSIN 4-CYCLE Gas Engine Driven GENERATING PLANT

2000 WATT, 60 Cycle, 115 Volt, Single Phase

Only $229.00 fob

GOV'T. COST $500.00

FULL 1-YEAR GUARANTEE

Wheel Base Assembly With Tow Bar...$17.95 extra

PORTABLE!—fits easily in car trunk! Protective carrying frame incl.

PAYS FOR ITSELF! Saves time, labor and money. Provides on-the-spot power for CONSTRUCTION, etc., where none is available or expensive to run in. Large enough for Floodlights; Saws; Pumps; and many more labor-saving heavy-duty machines. Ideal as a stand-by emergency power plant to duplicate house current. Plenty of power for lights, refrigerator, deep freeze, oil burner, radio, etc. Specifications below. CAN'T BE MATCHED anywhere at this price.

Remote Control Governor increases engine life by allowing engine to run at idle speed when load is removed from Generator.

GENERATOR 2000 Watts, 115 Volts, 17.3 Amps., 60 Cycle, single phase. Overload capacity well above its rated output. Excellent automatic voltage regulation plus Field Rheostat for even closer adjustment. Built-in Volt meter and receptacles.

ENGINE Famous WISCONSIN 5.6 H.P. air cooled engine. 4-cycle. Weather high tension magneto with impulse coupling for quick easy starting in any weather. Mechanical Flyball governor. Adjustable carburetor with automatic choke release. Timken roller bearings—self cleaning. Weighs 155 lbs. Over-all dimensions: 29" long, 19" wide, 20" high

SUPPLY LIMITED! IMMEDIATE DELIVERY! ORDER FROM AD

Free Catalog of War Surplus—Wholesale Equipment

ROBERTS ELECTRIC CO., Dept. PS-712, 849 W. Grand Ave., Chicago 22, Ill.

MAKE STRIPES with new PAINT PEN

Straight, curved, single or double

With any color paint, stripe furniture, bikes, autos, model planes, toys, linoleum, wallboard. Clean, crisp decorative lines. Can't clog or smear. Also use with glue, tempera, textile paint or underglaze . . . on wood, glass plastic, ceramics, metals, fabrics and paper.

Ask your dealer or order direct.

DEALERS	HOBBY	MFRS
Master paint striping tool in display carton. Write for discounts.	"Professional" results every time. Simple, easy to use. Order now.	Ask about heavy duty industrial striping tools.

DOUBLE STRIPE MODEL S COMBINATIONS. . . . $3.25

Single 1/16" stripe model $1.25

Other single stripe models $1.75 EA. 1/64", 1/32", 3/64", 5/64", 3/32" & 1/8"

Complete Kit (all 7 tips) $5.00

Extra tips 90c ea.

Extra 1/4" tip..$1.20

WENDELL MFG. CO. 4234 LINCOLN AVE., Dept. 235 CHICAGO 18, ILLINOIS

TRANSFORMER WELDER $24.95 FOB QUINCY

Complete with everything. Ready to plug in. 110 volts AC. Draws 15-30 Amps. Produces 75 Amps, 5 heats. Welds metal from 1/16" to 1/4" using 1/16" to 3/32" standard rods. Guaranteed unconditionally. 10-day trial. $5. deposit on C.O.D. Does everything welders costing up to $75. do. 1/4" welder $7.95 plus 50c for postage.

ESSAY MFG. CO., INC., Dept. 47, Quincy 69, Mass.

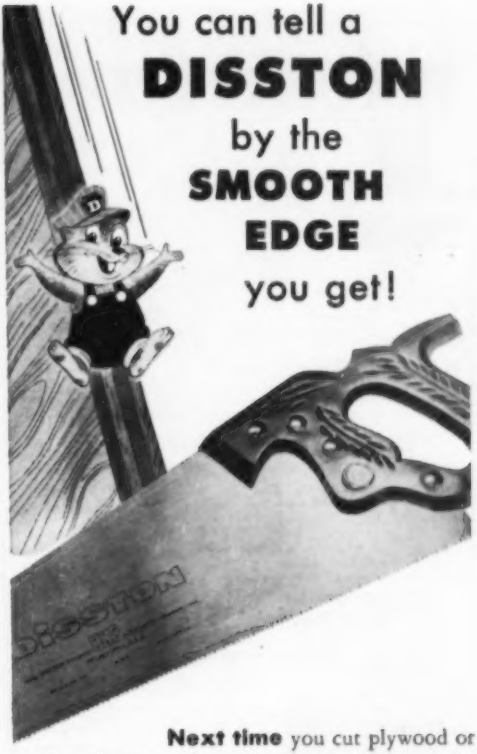
WOOD FINISHING made easy!

Be an expert, use Deft. SEALS, PRIMES, FINISHES. Dries in 30 minutes. No thinning. Semi-gloss interior BAR TOP.

Free Booklet **deft**

Be GOOD to your WOOD, DEFT-finish it.

DESMONDS, 1826 W. 54, Los Angeles 62, Calif.



You can tell a **DISSTON** by the **SMOOTH EDGE** you get!

Next time you cut plywood or other well-seasoned woods, use a 10-, 11- or 12-point Disston Hand Saw. Note how easily it cuts . . . what a beautifully smooth finished edge it leaves! That's because these fine-toothed saws are specifically designed for finishing work. Made of fine tool steel, with perfectly tempered and double taper ground blade, Disston Saws give years and years of service, too.

At better hardware dealers... everywhere!

Choose a 5½-point Disston Hand Saw for cutting with the grain.

Choose a 7-, 8- or 9-point Disston Hand Saw for cutting across the grain.

FREE ILLUSTRATED BOOKLET! 64-page Disston Saw, Tool & File Manual. Tells how to choose and use tools; how to care for them. Helpful hints on wood and metal working, and selection of materials. For your free copy write today to: *Henry Disston Division, H. K. Porter Company, Inc., Philadelphia 35, Pa.*

H. K. PORTER COMPANY, INC.

Henry DISSTON DIVISION

TOP VALUE SPECIALS!

SURPLUS ITEMS AT FRACTION OF ORIGINAL GOV'T. COST
AT GROBAN'S

ITEM #1010

BELT DRIVEN A.C. GENERATORS

Ideal for powering electric tools, oil burner, refrigerator, lights, or other appliances requiring up to 1000 watts of power. **1000 WATTS,** 115 Volts, 60-cycles A.C. 3600 R.P.M. Compact, self-regulating generator with V Belt pulley and double outlet receptacle. Rotation counterclockwise. May be driven by tractor or auxiliary gasoline engine. Requires 2½ HP minimum. Dimensions: 10" long x 8" high x 6" wide. Shipping wt. 27 lbs. F.O.B. Chicago **79.50**

MODEL 700—750 WATTS A.C. F.O.B. Chgo **59.50**

Model 2000—2000 WATT A.C. Generator F.O.B. Chgo **133.00**

A $15.00 Value 37-Piece

METAL STAMPING SET

STAMPS NAMES, NUMBERS, ON WOOD OR METAL

ITEM #390-B—FULL ALPHABET, A-Z, NUMBERS 1-9, "&", AND PERIOD. PRECISION HAND TRIMMED, deep cut, hardened TOOL STEEL STAMPS—IN FITTED EASY ACCESS CARTON. Made to rigid U.S. Army specifications.

Only $5.50 per Set
2 FOR $10.00 Ppd.

1½ H.P. HYDRAULIC SPEED REDUCER with FINGERTIP CONTROL

Item # 115

USE FOR: • Reamer Drives • Midget Cars • Feed Mills • Canning Machines • Conveyors • Lathes • Milling Machines • Motor Boats • Cream Separators • Garden Tractors • Pumps

Variable output speeds from 0 to input speed available by moving control handle. Locking handle maintains setting. Use input power of ¾ to 1½ H.P. Shafts ⅝" diam. Input rotation counter-clockwise facing shaft. Input speed 750 R.P.M. 7½" x 7½" x 11½". Output rotation reversible. Shipg. wt. 31 lbs. Complete with 2 qts. of oil and full instructions. F.O.B. Chicago **72.50**

2 H.P. 24 VOLT

ELECTRIC MOTOR

ITEM #315—Rated 24 volts D.C., 90 amps, 4000 R.P.M. Has ½" spline shaft on both ends of motor, ball bearing construction, as specified for use with electric wheelchair design Popular Mechanics March issue, 1953. Shipping Wt. 21 lbs. Dimensions: 11" x 5" x 6½". F.O.B. Chicago **13.00**

1-H.P.—12 VOLT ELECTRIC MOTOR

Item #308. 100 Amps, 5600 R.P.M. Double shaft ball-bearing construction. F.O.B. Chicago **12.50**

ORDER DIRECT FROM AD—
SATISFACTION GUARANTEED
Send Payment Or Purchase Order Today

FREE—WINTER '57-'58 CATALOG

60 VALUE-PACKED PAGES—of unsurpassed War Surplus and newly manufactured Equipment Bargains for farm, home, factory, workshop. Write letter today.

GROBAN SUPPLY CO. DEPT. PS-11
GROBAN BUILDING
1139 S. WABASH AVE. CHICAGO 5, ILL.

How Good Are School Science Labs?

[*Continued from page 157*]

Half an hour later, the children found the oven dowel loose, the refrigerator dowel stuck tight. They had proved for themselves one theory was wrong: Heat didn't make drawers stick. But what did?

Some subtle questioning from teacher prompted one bright lad to suggest, "The weather is different in the summer. It's not just hotter, it's stickier."

This led to a discussion of humidity—and another experiment with the dowels. One sample went into a covered plastic box with a saturated sponge, the other went into a similar box with some drying chemicals.

By the next day those children had learned what made drawers stick. More important, they had learned to wonder, to question, to experiment—and to keep trying until they found the answer.

What your youngster gets. The kind of lab instruction in your schools depends mainly on the teachers. You can judge the job they are doing by observing them in action and asking a few questions.

- Are they qualified? A high-school science teacher should have a master's degree and a certificate to teach science, not some other subject.
- Are they overloaded? Even the best-qualified teacher cannot plan experiments, guide students in original research projects, advise the science club, consult with parents and set up field trips if he has too many classes.
- What kind of lab manuals do they use? Good ones present real problems requiring ingenuity and resourcefulness.
- Do they inspire their students? Just listening to them in class reveals a lot. The teacher who says flatly, "Today you will learn the principles of osmosis as outlined on page 24 of the book," is doing a routine job. The one who says, "Yesterday we were wondering how trees can lift water up into their tallest branches. Today we're going to find out how right here in the lab," is leading his students to a sound understanding of science.

The final proof of any process is the product. That applies to education. If your youngster leaves his science class with active curiosity, eagerness to try and the ability to find things out for himself—that school has put him on the right road to the future. END

5 POWER TOOLS IN ONE

NEW Dremel Deluxe MOTO-SHOP

Complete Power Workshop
In One Compact, Portable Unit

The amazing new Dremel Moto-Shop is the most versatile multi-purpose tool ever invented. Has 1,001 home and shop uses. Basically, it's a 15" Jig Saw with a unique power take-off to which you simply connect other attachments. It then converts to a disc sander, bench grinder, buffing wheel, and a flexible-shaft machine . . . all powered by a BALL-BEARING ROTARY MOTOR.

And this professional-quality, portable power shop can be set up practically anywhere — basement workshop, kitchen counter or card table. Weighs only 12 lbs. As a Jig Saw, it will cut 1¾" wood, 18 gauge copper, 1/16" steel — all with same blade. Foolproof blade guard makes it absolutely safe — even for children. Handles everything from bird-houses to full-size furniture.

The flexible shaft is a complete machine shop in itself. Use it for sharpening, grinding, polishing, drilling, carving. Collet capacity 1/64" to ⅛". Other attachments have hundreds of home and shop uses.

Moto-Shop is the perfect "ALL FAMILY" workshop — safe for even mom and the children. Helps build a close father-son relationship.

See Your Power Tool Dealer for a Demonstration Today!

Model 57 Moto-Shop. Includes Jig Saw with disc sander attachment only. Other attachments can be added later - - - **$33.95**
Deluxe Model 57 Moto-Shop with all attachments shown - **$49.95**
Price of attachments only, if purchased separately - - - **$19.95**

QUALITY POWER TOOLS SINCE 1934

Write for ***FREE*** *Catalog*

DREMEL MFG. CO., Dept. 127L, Racine, Wisconsin

D-33

DREMEL

CASH IN ON WAR SURPLUS!

IMAGINE! HUNDRED DOLLAR VALUES —NOW SELLING FOR PENNIES!!

Hundreds of surplus items for home, farm, garage and shop... going for pennies on the dollar! All built to the government's highest standards. Tools, machinery, gear reducers, pumps, boats, motors; page after page of tremendous bargains.

SEE FOR YOURSELF!

Send for this big catalog and see for yourself! See pages of surprising bargains. See items that cost the government thousands of dollars going for pocket change. Act now. Cash in on government surplus. Send 10c for your copy.

KARL ORT, Dept. PS-11, THOMASVILLE, PA.

NOW You Can DRILL, SAW, REAM, CUT . . . ALL WITH ONE BIT!

Beaver's new improved Hi-Speed side cutting drill bit can be used on any electric drill, drill press, lathe, etc. Made from the finest American hi-speed steel. 3½" long, 2" side cutting section, ¼" diameter. Designed to cut steel, wood, plastic, aluminum, etc. MONEY back guaranteed. Specify types desired. All Purpose, Wood and Heavy Metal. BUY From Your Dealer or send check or money order today:

BEAVER HI-SPEED-SAW DRILL BITS

ONLY **$2.45** each — 3 for $7.00

Dealer & Jobber Inquiries invited. Ideal Gift.

BEAVER DRILL & TOOL CO., 3008A McGee Trafficway, Kansas City, Mo.

[*Continued from page 166*]

talent for cabinetmaking, as you have, he'll have got that from you, too—but mainly because you've let him work alongside you without driving him or setting impossible standards.

So far as is known now, musical talent has a stronger heredity basis than most others. That's because some of the qualifications of a musician—a sense of pitch, for example, and the ability to recognize tones—are closely linked to physical characteristics, the kind most directly influenced by heredity.

If you've been an exceptionally good sprinter—or swimmer, tennis player, boxer, or ball player—your boy is much more likely than the youngster next door, whose parents never showed any aptitude for athletics, to be good here, too.

But the capacity for being outstanding in any line is not enough. Neither is interest or drive. Both are needed.

Suppose that little guy complains after school some day that he just can't "get" French. Your wife recalls that she was never very good at French herself. Has he inherited his difficulty?

If he's of average intelligence, probably not. "Brightness" in a particular subject seems to depend largely on interest. While intelligence in general is inherited, the youngster who "can't get" or "just hates" a certain subject may well have been influenced mostly by remarks at home or the attitude of his pals. Or maybe the teaching's at fault.

Mathematics seems to be different. Identical twins—unlike ordinary brothers and sisters—generally have the same aptitude for mathematics, even when they've been raised apart.

Our children inherit at least some of their personality traits, too, the study of twins indicates. Virtually all research so far has been on the gloomier side. For example, a British geneticist, James Shields, studying a group of London youngsters, was interested in such problems as moodiness, over-shyness, fears, hysteria, delinquency.

In the few cases where one twin had got into actual trouble with the law for stealing or some other delinquency, the other twin had, too. This was so whether

Change an idle corner to a home office with low-cost Western Pines

Snug, attractive, useful—gives you a handy spot to write or 'phone or file things.

And so simple to build in. The Western Pines are straight-grained, carefully-dried, soft-textured, economical. They take any finish beautifully, look lovely just left natural and waxed.

Whatever your building or remodeling plans, check the Western Pines. Your lumber dealer will be glad to give you details.

FREE! "FRIENDLY HOME IDEAS"—85 photographs, many in color, feature traditional and contemporary ideas for building, decorating and remodeling using cheerful Western Pines. Write for your FREE copy to WESTERN PINE ASSOCIATION, Dept. 211-L, Yeon Bldg., Portland 4, Oregon.

The Western Pines

Idaho White Pine
Ponderosa Pine
Sugar Pine

and these woods from the Western Pine mills
WHITE FIR · INCENSE CEDAR
RED CEDAR · DOUGLAS FIR
ENGELMANN SPRUCE
LODGEPOLE PINE · LARCH

are manufactured to high standards of seasoning, grading, measurement

TODAY'S WESTERN PINE TREE FARMING GUARANTEES LUMBER TOMORROW

NEW HARLEY-DAVIDSON DUO-GLIDE

with a new concept in riding comfort and power

For a miracle ride swing aboard the DUO-GLIDE — absolutely the finest motorcycle in the world! Sleek, powerful and instantly obedient it's truly a masterpiece by the industry's top-flight engineers and craftsmen.

New swinging-arm rear suspension coupled with Hydra-Glide front fork and spring-loaded seat post provide an unbelievably smooth ride. Exclusive hydraulic rear brake marks another Harley-Davidson first. Other features include special, performance-upping engine refinements and a wide choice of brilliant new color combinations.

See it, try it and you'll agree that solo or with a buddy, you get a miracle ride on the DUO-GLIDE. Ask your dealer about his liberal trade-in deal and new convenient terms. Or, write for free literature.

DUO-GLIDE — with 74 O.H.V. power plant . . . the ultimate in motorcycling!

HARLEY-DAVIDSON **MOTOR CO.** Dept. P5, Milwaukee 1, Wis.

Do it now with

DAP®

Use DAP Caulking Compound to fill cracks around windows, door frames, anywhere. Saves heat. Stops insects, drafts, rot. Fast, easy. Get tube, cartridge or can and free do-it-yourself booklet at your nearest hardware, paint or building supply dealers.

DICKS-ARMSTRONG-PONTIUS, Inc.
General Offices: Dayton, Ohio

HI-FI TOOLS by UTICA

Now for the Hi-Fi enthusiast, a complete set of quality hand tools designed for the assembly of Hi-Fi components.
Backed by famous full guarantee.
Use UTICA, the tools the experts use.

UTICA DROP FORGE & TOOL DIVISION
Kelsey-Hayes Co., Utica 4, N. Y.

How Much Like You Will He Be?

the twins were identical or fraternal—suggesting that environment had been a stronger influence than heredity.

But in the other cases, both members of a pair of identical twins turned out to be much more likely to have the same personality maladjustment than both members of a pair of fraternal twins. Identical twins were affected the same way by a bad family situation; fraternal twins were not. Heredity, the investigator concluded, had strongly influenced the youngsters' personalities.

Dr. Franz J. Kallman, principal research scientist at the New York State Psychiatric Institute, has indicated the influence of heredity in the mental illness, schizophrenia, by finding that when one identical twin had it, in most cases the other twin had it, too. But with fraternal twins, in most cases, the second twin did not. It seems hereditary, then. On the other hand: some medical analysts say they have traced cases of "split personality" to childhood experiences.

Animal studies, too, are throwing light on whether our youngsters inherit parts of their personality. For example, Dr. J. L. Fuller, of the Jackson Memorial Laboratory, Bar Harbor, Maine, reports that some strains of rats make many errors in a maze; others, only a few. Some strains under laboratory observation run only a few feet a day; some run several miles. There are strains of mice that have convulsions when a doorbell rings, and strains that don't. Terriers and basenjis will fight harder for a bone than will such dogs as beagles and cocker spaniels.

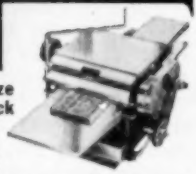
Working with guinea pigs, other investigators have reported that even the sex drive—high, low, or medium—is inherited.

There's a danger, though, in applying these findings to man because human behavior, unlike animal, is powerfully stimulated by learning and custom and conscience.

Your child hasn't inherited any fully developed traits. He has inherited combinations of genes that will make the development of certain traits possible if the circumstances are right.

Luckily for you—and him—some of the most important of these circumstances are under your control. END

SAVE MONEY on LUMBER with the LOW-COST BELSAW PLANER



• Convert Rough and Random Size Lumber Into Cabinet Finished Stock

Now anyone can make perfect cabinet finished stock from low-cost rough lumber . . . any size up to 12¼ inches wide and 6 inches thick. Turn out high grade finished material at a fraction of the cost you pay lumber yards. Big 42-inch-long bed makes it easy to plane heavy, wide and long pieces . . . BELSAW self-feeds at 14 to 34 feet per minute.

USE THIS ONE LOW-COST MACHINE for Planing, Jointing, Sawing, Milling, Tongue and Groove.

You can easily make flooring, siding and many other popular patterns with your Belsaw. Your Belsaw quickly pays for itself with savings on raw materials and profits on finished stock . . . a highly profitable machine for custom work. Compare Belsaw with any 12-inch planer on the market . . . Belsaw gives you more essential features—yet costs you $50 to $125 less than others.

Send Today for Free Literature on the Belsaw Multi-Duty Planer.

BELSAW MACHINERY CO 2068 Field Bldg. Kansas City 11, Mo.

SHEET METAL MACHINES

Brakes form angles, locks, pans, etc. Quick eccentric clamp. All steel construction.

15"—16 gauge steel	$28.00
36"—22 gauge steel	$37.00
48"—24 gauge steel	$52.00
Floor stand	$ 8.00
15"—24 gauge Folder	$16.50
36" Pan and Box brake	$60.00
¼ x 3 Adjustable Bender	$11.50
16 gauge 7" Bench Shear 3 adj. gauge	$16.50
30"—20 gauge Curve Former	$11.50

ORDER DIRECT OR SEND FOR FREE CATALOG

VYKE MFG. CO., N-4158 Jason St., Denver 11, Colo.

Nicholson and Black Diamond Files

A file for every purpose

Forsberg's G-WHIZ

7 SAWS IN ONE

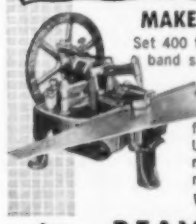
NEW ELECTRIC POWER SAW

A man's tool—safe enough for a boy

Not a vibrator **$24.95**

SEE YOUR HDWE DEALER

Automatic Saw Set...



MAKE EXTRA PROFITS!

Set 400 teeth per minute on hand or band saws, 4 to 16 point, with the BeMaCo Automatic Saw Set. Fast, accurate, true **hammer-anvil action** sets teeth uniformly, eliminates tooth breakage. Used profitably by saw shops and manufacturers everywhere. Every machine positively guaranteed!

Write for details—today!

Saw Machine Division 31-S

BEAVER MFG. CO.

PO Box 434

800 ISIS AVENUE • INGLEWOOD, CALIF.

NEW BLACK & DECKER ¾ H.P. HEAVY DUTY ROUTER GIVES YOU MORE

A maximum of power packed into a minimum of weight! That's the new Black & Decker Router . . . one of the lightest, most compact units on the market! And it's loaded with special features for faster, easier, more precise work. This is the *complete* woodworking tool, perfect for beading, grooving, routing, fluting, etc. Compare the power and performance of the new Black & Decker Router with **Only** any other. Then compare price **$59.50** and you'll be sold!

...and new B&D Router Kit!

B&D ROUTER KIT gives you Router, six popular bits, Straight and Circular Guide in handy metal kit for only $88.00 . . . Save $5.75.

WRITE TODAY for new B&D Router Manual—loaded with project ideas, illustrations, professional tips. Send only 50c with name and address to: The *Black & Decker Mfg. Co.*, Dept. S117, Towson 4, Md. (In Canada: P. O. Box 278, Brockville, Ont.)

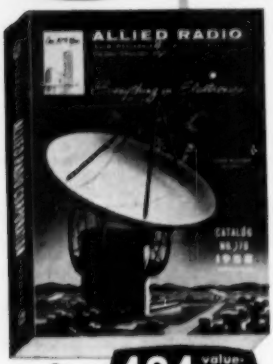
Find Your B&D Dealer in the "Yellow Pages"

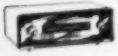
Look under "Tools-Electric"

Black & Decker

World's Largest Maker of Electric Tools

see the amazing new
EASY-TO-BUILD ELECTRONIC
ALLIED knight-kits
in ALLIED'S 1958
ELECTRONIC SUPPLY CATALOG
FREE!
BUILD YOUR OWN!
SAVE MONEY—HAVE FUN




HI-FI KITS

HOBBY KITS

INSTRUMENT KITS

HAM KITS

404 value-packed pages

SAVE on Everything in Electronics
WORLD'S LARGEST STOCKS
Everything for Experimenters, Builders, Amateurs, Servicemen, Engineers and Hi-Fi Hobbyists. Get more for your money in Hi-Fi systems and components; build-your-own KNIGHT-KITS; recorders and phono equipment; TV tubes, antennas, accessories; Amateur station equipment; test instruments; industrial electronic equipment—plus the world's largest stocks of parts, tubes, transistors, tools and books. Send today for your FREE 1958 ALLIED Catalog!
Everything in Electronics From One Reliable Source
our 37th year
EASY TERMS AVAILABLE
ALLIED RADIO
send for FREE Catalog
ALLIED RADIO CORP., Dept. 27-L7
100 N. Western Ave., Chicago 80, Ill.
☐ Rush FREE 1958 ALLIED 404-Page Catalog
Name_____
Address_____
City_____ Zone____ State____

How to Buy a Good Tape Recorder

[Continued from page 212]

ever, you have to wind it back onto the supply reel. So its spindle must also be driven—in reverse. And finally, a high-speed-forward drive is needed for those times when you want to skip to the tag end of a reel. Since both rewind and fast-forward are for skipping rather than playing, faster drives are generally better.

Two recording speeds. Nearly all machines now offer a choice of at least two recording speeds. A dual capstan speed is like a seesaw, with fidelity and economy occupying opposite seats. Multi-speed machines have been created to let you eat your cake and have it too.

Increasing tape speed will raise the upper-frequency limit of any recorder and reduce flutter and wow. Higher speeds are therefore preferable for musical recordings. The now-standard "high-fidelity" speed for home recorders is 7½ inches per second.

For not-so-high-fidelity work, on the other hand, lower speeds have more than enough sound range. They offer the convenience of longer play and cut the tape cost of recordings you want to keep.

Tape speed, it should be noted, is only one of several items that affect frequency response. Improved electronic designs, better tapes and coatings, and narrower magnetic-head gaps have all helped to increase sound quality at lower speeds.

Inputs. Every machine has at least one input jack so you can plug in a microphone or a "patch cord" from the loudspeaker of a radio, TV, or record player. But input connections vary. On some recorders the mike jack is separate from the radio-TV input (to make it possible for you to mix two sound sources on a single tape); still other models have separate input circuits for low-level magnetic-phono cartridges.

Nearly all recorders have an output jack to which you can connect an external loud-speaker. If you have a hi-fi rig and want to make use of its superior amplifier, as well as its loud-speaker, look for a second output connection. It's often called "high-fidelity output."

Operating features. Many of the working parts built into tape recorders have no direct bearing on sound quality, yet they can be very important in helping you get the most satisfactory service,

NEW G-E VR II

A dramatic new cartridge to bring you new heights in Hi-Fi performance!

New Full-range Reproduction. General Electric's VR II magnetic cartridge makes possible faithful reproduction in the frequency range from 20 through 20,000 cycles.

New 4-Gram Tracking Force. Lateral compliance of the VR II has been extended to 1.7 x 10^{-6} cm per dyne, permitting a tracking force of only 4 grams to minimize record and stylus wear.

Instant CLIP-IN-TIP Stylus. Stylus replacements can be made at home without removing cartridge from tone arm. No need to discard an entire assembly when only one tip is worn.

New Electrostatic Shielding. Prevents pick-up of electrostatic interferences and hum; also grounds stylus assembly, preventing build-up of electrostatic charges from the record surface.

New Lightweight Construction. Microscopic precision and strong, lightweight construction of General Electric's new VR II assures your continued pleasure and satisfaction.

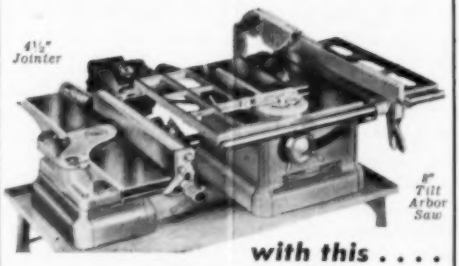
Hear the difference! Ask for a demonstration at your dealer's.

For further information write to:
Specialty Electronic Components Dept.
Section HFPS1157
West Genesee Street, Auburn, New York

In Canada:
Canadian General Electric Company
189 Dufferin Street, Toronto 3, Canada

GENERAL ELECTRIC

Now! Do 90% of your WOODWORKING



with this . . . .

DURO MASTER COMBINATION SAW/JOINTER

Here's the most versatile, most practical combination power tool unit ever designed! Performs all of your woodworking jobs accurately, safely, easily—including dadoing, cross-cutting, ripping, tenoning, bevel cutting, rabbeting, taper cutting, plus many others. Both saw and jointer are operated from a single motor and it takes but seconds to switch from unit to unit . . . **an exclusive Duro development.** Has many other exclusive features.

Saw Jointer Only $136.00

Write for FREE Power Tool Catalog showing this remarkable unit and the complete Duro line of power tools. Learn how Duro's patented motor mount permits you to run a complete power tool workshop—with 1 motor!

DURO METAL PRODUCTS CO.
2600 No. Kildare Ave., Chicago 39, Ill.

WE DON'T NEED ENGINEERS

. . . but they write to us daily to order our GENIAC Electric Brain Construction Kits.

So do TEACHERS, SCIENTIFIC AMATEURS, INDUSTRIAL FIRMS and schools. (See list below.)

THOUSANDS OF SATISFIED CUSTOMERS have bought GENIACS on a 7 DAY REFUND guarantee

We are proud to offer our 1957 Model, with up to the minute improvements for the thousands of new customers who can use them.

WHAT IS A GENIAC?

Here is a picture of the 1957 Model GENIAC in the display rack ($3.00 separately) which comes with every kit. GENIAC stands for Genius Semi-Automatic Computer. A kit of specially designed switch decks and racks which permit the user to construct more than thirty different machines (following directions and wiring diagrams) and as many more as he is able to design himself. These machines demonstrate the applications of electric circuitry.

APPLICATIONS OF GENIAC

SIMPLE COMPUTER CIRCUITS for binary, decimal adding, subtracting, dividing, multiplying machines, PROBLEMS to symbolic logic, reasoning, comparing, PSYCHOLOGICAL TESTING and EXPERIMENT GAME PLAYING CIRCUITS for tit-tat-toe and nim. ACTUARIAL ANALYSIS.

SOME OF OUR CUSTOMERS

Allis-Chalmers • Remington-Rand • International Business Machines • Manuel Missionary College • Barnard College • Westinghouse Electric • Phillips Laboratories • General Insurance Co. of America • Lafayette Radio • Ronr Aircraft Co. • Albert Einstein Medical College • Naval Research Laboratories • Board of Education, Tecumseh, Nebraska • Los Angeles Public Schools • Jefferson Union High School • Oklahoma A & M • Courtland Jr. High School • Bell Telephone Laboratories.

WHAT COMES WITH THE KIT?

BOOK-1. SIMPLE ELECTRIC BRAINS, AND HOW TO MAKE THEM . . . 64 page experiment manual.—NEW! **2.** MINDS AND MACHINES . . . 700 page text on computers, automation and cybernetics.—NEW! **3.** WIRING DIAGRAMS for basic GENIAC circuits.—NEW! **4.** Beginners Manual for the person who has little or no familiarity with electric circuits.—NEW! **5.** GENIAC study guide . . . the equivalent of a full course in computer fundamentals, lists additional readings.
PARTS—PANELS, DISCS, RACK (for easy assembly and display), Hardware, wire, tools, battery, holder, etc. for more than thirty machines.
SEND for your GENIAC now. At only $19.95, a bargain, comes complete with over 400 parts and components, 5 books and manuals. We guarantee that if you do not want to keep GENIAC after one week you can return it for full refund.

Add 80c West of Miss. $2 outside U.S. Mail Name & Address with Check or Money Order to

OLIVER GARFIELD CO., Inc. Dept. PS-1178 126 LEXINGTON AVE. NEW YORK 16, N.Y.

The careful work you do in building your high fidelity sound system will be shown off to best advantage if you use precision-made JBL Signature loudspeakers. Remember, it takes no more effort on your part to

build with the best!

JBL SIGNATURE

MODEL D130, only 15" Extended Range Speaker made with a 4" voice coil. Your basic speaker. The D130 alone, properly enclosed, covers entire recorded audio range. Later serves as low frequency driver in your divided network system.

MODEL D123, 12" Extended Range Speaker, perfect for "building in" because of its shallow construction – only 3⅝". It sounds even better mounted in a reflex enclosure or folded horn. Cast frame, edge wound aluminum ribbon 3" voice coil.

MODEL 175DLH is a high frequency driver with exponentially-tapered horn and the exclusive JBL Signature Acoustical Lens. The lens distributes highs over a solid 90° angle with equal intensity regardless of frequency. Designed for 1200 cycle crossover.

MODEL 075 high frequency unit is made with a ring radiator instead of the conventional diaphragm. Highs above 2500 cps set a new standard for cleanness, smoothness, precision and completeness. A solid chunk of audio craftsmanship.

MODEL 086 KIT is the ultimate in fine loudspeaker components. These are the same professional theater units used in the famous JBL Hartsfield system. Massive 375 driver with serpentine acoustical lens, 150-4C low frequency unit, and N500H network for 500 cycle crossover.

For information on other JBL units, acoustical enclosures, and the name of your nearest JBL Authorized Audio Specialist, print your name and address on this coupon and mail to:

JBL

JAMES B. LANSING SOUND, INC.
3249 Casitas Avenue, Los Angeles 39, California

☐ Please send free new catalog. I would like to receive a copy of technical bulletins describing the following:
☐ D130 ☐ D123 ☐ 175DLH ☐ 075
☐ How to Build a Folded Horn Enclosure.

NAME _____
ADDRESS _____
CITY _____ ZONE ____ STATE ____

over a long haul, from your tape machine.

The *level indicator* is a good example. For if you misadjust the volume control when you make a recording, or hold the microphone too close, or too far away, your tape will be noisy, distorted, uneven, or of poor quality.

To help you avoid such mistakes, every machine has some kind of recording-level indicator. The simplest one is a single neon lamp that glows when sound is overloading the tape. It gives minimum protection, because it doesn't distinguish between a setting that's too low and one that's just right.

Dual-neon indicators are better. One bulb (or one side of a dual lamp) flickers fairly steady when the recording level is okay. The other bulb (or side) lights up to indicate distortion. You can get more exact information about recording level from a tuning-eye indicator, a tube with a glowing face. For still more precise level control, you must go to the most expensive indicator, the VU (for Volume Unit) meter.

A *tape counter* is another worthwhile feature. Sometimes called a reel-revolution counter, a tape index, or—incorrectly—an elapsed-time indicator, it helps you quickly locate any section of a tape.

An *editing control* will prove handy if you use your recorder for dictation or note taking. It allows you to pause briefly, then resume again without resetting the controls.

The type of *roller release* built into a machine will only be important if you plan to tape broadcasts automatically by connecting your recorder to a clock radio or timing switch. To prevent slippage, the rubber roller that holds the tape against the capstan must exert considerable pressure. If left engaged when the machine is stopped, the roller may develop flat spots that can cause flutter, wow, or thump.

This won't happen often, because turning the stop knob disengages the roller on all machines. But for an automatic recording you preset the controls and let the clock radio make and break power-line connections. So if you'll do a lot of this work, look for a machine that releases its pressure roller automatically when power is interrupted.

How to buy. The chart of makers'

Speed up Scroll Sawing with a

DREMEL Electric MOTO-SAW

HANDY FOR HOBBYIST OR CRAFTSMAN

You do a professional job on any hobby or household project when you use a Dremel Moto-Saw. You just guide it—it does the work. High-speed reciprocating motor — easily cuts asphalt and rubber tile, Masonite, Formica, wood up to ¾". Blade-holder faces four ways — saws in any direction. Cuts smooth, no sanding required. Only two moving parts, never needs oiling. Uses 110-120 V. AC. See your hardware or hobby dealer. If he can't supply you order direct from factory on a 5-day trial, money back guarantee. We ship postpaid.

SEE YOUR HARDWARE OR HOBBY DEALER

DREMEL MFG. CO • Dept. 117L • Racine, Wis.

NEW 1958 CATALOG **BOAT KITS** 200 MODELS—SAVE 2/3

EASY TO BUILD—Designed for the amateur. Over 200 Models. Prams to Cruisers, 8 to 21 ft. Formed hulls Semi and Custom finished. Save 50%...Now NEW Sea Ray Molded FIBERGLAS BOAT KITS. Truly professional results. NO upkeep. SAVE 2/3 assembly time. 12 to 16 ft. Utilities and Runabouts. SEND 35c for 64 page Boat Kit & 24 page Sea Ray Catalogs. SEND $1.00 for both plus "Boating Handbook". Dealers inquire for franchise.

WRITE NOW! CUSTOM CRAFT, BUFFALO 7, MINN. Y.

DRIVING SCREWS? use STANLEY *Screw-Mate*®

Use the right Screw-Mate drill-countersink for every screw you drive. Fits power or hand drill — ¼" shank — 15 sizes. Use Screw-Mate counterbores and plug cutters, too. At your favorite store for tools. Handy set of 5 countersinks @ $3.69.

STANLEY THE TOOL BOX OF THE WORLD

the finest **FLOOR POLISHERS** *are* **Red Devil Tools.**

AUTOMATIC RETOOTHER for **HAND SAWS**

MAKES NEW PROFITS

Cuts new teeth in 50 seconds—any size 4 to 16 points. Old teeth fall off as chips. Easy to operate. A perfect job.

FREE! Write Now for Descriptive Literature

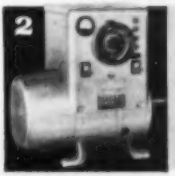
BURR MFG. CO.
8943-N VENICE BLVD. LOS ANGELES 34, CALIFORNIA

Arc welding PAYS BIG!

"Build Your Own" gas drive welder with this HOBART generator and SAVE $200 to $300

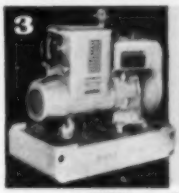
Just connect this low cost 250 amp. unit to any good used auto engine and you're equipped for a highly profitable welding business. Investigate this wonderful opportunity for making more money by mailing the coupon below.

AC welder-AC power



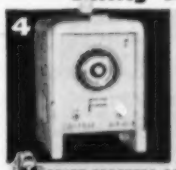
200 amp. combination that you can connect to your own power source. Lets you operate where no power lines are available. Furnishes current for welding and power for running tools, lights, motors, etc. Build your own combination welder and power unit with a good used auto engine.

air-cooled engine driven



Welds anywhere. Easily mounts on truck or trailer for getting to those profitable emergency repair jobs. Light, rugged, compact and air-cooled. Fine for fabrication purposes and tough enough for continuous operation on light or medium production work.

utility AC arc welder



Superior performance, economical operation and general serviceability make this a popular model for small shops, implement shops, auto service shops, plumbing and heating contractors, farm welding, etc. Has same features of the big industrial models.

Welding Lessons 200 pages fully illustrated, self teaching $1.00

HOBART BROTHERS CO., BOX P-117, TROY, OHIO Phone FE 2-1223

HOBART BROS. CO., Box P-117, Troy, Ohio

Without obligation, send me complete information on:

☐ 1. "Build Your Own" ☐ 3. Air-Cooled, Engine Driven
☐ 2. AC Welder-AC Power ☐ 4. Utility AC Welder
☐ Enclosed is $1. Send me Welding Lessons Book

NAME_____

ADDRESS_____

CITY_____ STATE_____

Which Irwin bit bores holes fastest?

Fastest cutting new Speedbor "88" for electric drills. Bores 1" holes 2½" deep in just 60 seconds. Increases the average boring range of small power drills. Sizes ¼" to 1". Only $.75 each.

Fastest Boring 62T Hand Brace Type. Only 16 turns to bore 1" holes through 1" wood. Double cutter action. Sizes ¼" to 1½". As low as $1.

Fastest Boring Expansive Bit Type. Bore up to 35 standard holes with just one bit. Two sizes give ⅝" to 3" boring range. America's most versatile bit for home and farm. Only $3.80 for largest size.

Balanced cutting heads do the job in seconds

Every Irwin wood bit gives faster, cleaner boring in any wood — no matter the type. Spurs and cutters are precision-balanced to give free and easy cutting action. Made to last for years. Irwin is the wood bit hardware dealers recommend.

Free Booklet tells how to use, select and take care of wood bits. Many pictures. Write Irwin, Dept. 8D, Wilmington, Ohio.

IRWIN • the original solid center auger bit • screw drivers • screw driver bits

Wilmington, Ohio

RUGGED P&C PUNCHES & CHISELS *make tough jobs easy...*

There's no substitute for quality when it comes to punches and chisels. That's why smart men buy P&C. Hot forged from special analysis alloy steel scientifically tempered. Precision ground points and cutting edges . . . backed by famous P&C guarantee of quality.

Buy your tools from colorful P&C Tool Merchandisers in more than 12,000 stores coast to coast. Send 10c for catalog.

P&C TOOL COMPANY

Box 5926, Portland 22, Oregon

Chicago Warehouse: Schiller Park, Ill.

Subsidiary of Pendleton Tool Industries, Inc.

How to Buy a Good Tape Recorder

specs should help you narrow your selection to two or three models. But before you make a choice, try them out.

One good reason is that methods of measurement are not uniform throughout the industry. So some of the electronic data is not directly comparable. Moreover, the final test of any piece of sound equipment is how it sounds to you.

If you're concerned about musical quality, buy or borrow a roll of professionally recorded tape and take it along when you shop. A familiar piano solo makes a good test tape because flutter and wow have a very noticeable effect on piano music. Use a blank tape (the dealer will provide it) to put the machine through its other paces. Is it easy to thread? Are controls and indicators clearly marked, convenient to use?

If your recorder is going to be operated by several people, test it for the effect of careless or inexpert handling. For example, if it's possible to switch from rewind to fast-forward without first stopping the reels, try it and see whether the tape spills, snaps, or stretches.

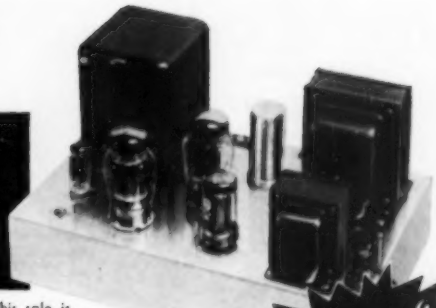
How are the brakes? Do they stop both reels quickly? And do they take hold automatically, or do you have to manipulate them to keep tape from spilling? Some recorders handle easier than others. You'll get more use and pleasure from one that's gentle with tape. END

Traffic Light Marks Driveway

WHEN San Francisco scrapped its old "bird-cage" traffic lights in favor of modern types, a homeowner in neighboring Sausalito quickly salvaged one to adorn the entrance to his driveway. Set back from the property line, its Stop and Go lights face a street hardly a block long.

below manufacturer's cost!
fully guaranteed

60 WATT AMPLIFIER



MusiCraft capitalized on a once-in-a-lifetime opportunity. Because this sale is limited, act fast. Look at the price...Check and compare the specifications... Complete satisfaction is assured or your money back.

SPECIFICATIONS

- **IM Distortion....**Less than 1% @ 60W.
- **Harmonic Distortion....**Less than 1% 20 cps. to 20,000 cps.
- **Frequency Response....** ±0.5DB, 20 cps. to 20,000 cps.... ±1DB, 7 to 70,000 cps.
- **Sensitivity....**1.5 volts rms. for 60 watts.
- **Damping Factor....**choice of 15 or 30 by a switch.
- **Hum and Noise Level....**85DB below 60W.
- **Hum Nullifier Control which compensates for aging or replaced tubes.**

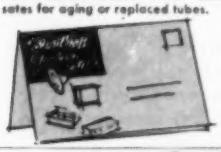
FEATURES

- Chrome plated chassis
- Choke filtered power supply
- Octal socket for preamplifier power connection (wired for Heathkit, Dyna-kit and other preamplifiers)
- Fuse receptacle on chassis
- Heavy duty power cord
- Biased filament supply
- Tubes: 2-6550, GZ34, 6BA8A
- Completely assembled, wired, and tested
- Dimensions—9" x 14" x 8" high. Shpg. Wt., 31 lbs.

MusiCraft Special

IN FACTORY SEALED CARTONS manufactured to sell for $169.95

NOW $74.95



Mail Orders Filled Promptly

For more high fidelity bargains write for MusiCraft's brochure.

MusiCraft 48 East Oak St., Chicago 11, Ill., DElaware 7-4150

© 1955

best deal for self-installation

DANBURY *Rubber Tile*
PLASTIC-FORTIFIED

The Danbury Rubber Company, Inc.
Danbury, Connecticut

LIFETIME FLOORS OF BEAUTY AND COMFORT

FINEST IN WOODS
TOOLS, MATERIALS & SUPPLIES

145th Anniversary Edition

Constantine's latest catalog. **126 pages, many in color.** Everything craftsmen need in hard-to-get hardware and supplies. Veneers, Inlays, Carvings, Mouldings, Upholstery Supplies, Plans, Sections on many Hand and Power Tools, How-to-do-it and wood finishing articles. 83 inlay designs and big wood identification panel of over 60 woods . . . all in natural color. Finest book ever offered. **Send coupon for copy today!**

Send 25c (refunded on 1st order) for this catalog and "Chips and Chats", a Constantine publication, will be sent FREE!

ALBERT CONSTANTINE AND SON, INC.
2054E Eastchester Road • New York 61, N. Y.

CONSTANTINE'S National Woodworking CONTEST . . .

CASH PRIZES

America's leading supplier of woods and woodworking materials offers you the chance of national recognition for your skill. Win one or more of 309 prizes. Nothing to buy, no entry fee. Contest closes March 31, 1958. Send coupon for details and entry blank.

MAIL COUPON TODAY!

Albert Constantine and Son, Inc.
2054E Eastchester Rd., New York 61, N.Y.

☐ Enclosed 25c (refunded on 1st order). Send Catalog and **FREE** "Chips and Chats".

☐ Contest details and Entry Blank.

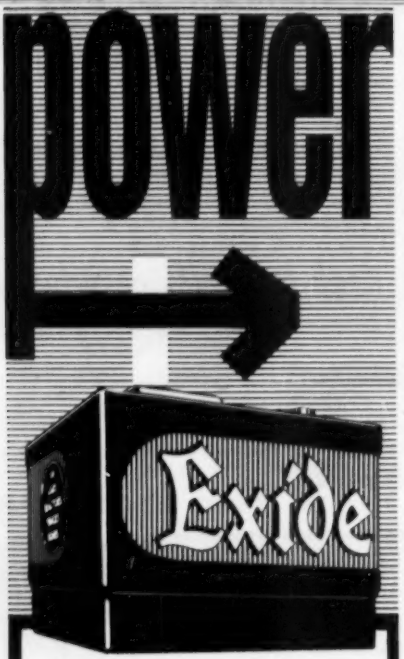
Name.....
Address.....
City.....State.....

WANT ME A MAN
who uses
AERO SHAVE!

Save 20¢ a Can!
Get hep, lads! Get rich, creamy AERO SHAVE . . . the smoothest, slickest lather bomb of all! Three beard softeners *plus* gentle Lanolin! *Feel—save* the difference! Only 59¢.

59¢ AERO SHAVE

POWER



Instant *power* for quick starting . . . Dependable *power* ready when you need it most . . . Long-lasting *power* that costs you less per month or mile. Yours with a powerful EXIDE.

When it's an Exide . . . you start

Chevrolet—Lower, Longer, Livelier
[*Continued from page 110*]

fore it was ready. Strictly a high-speed, competition Corvette sports-car power plant, it idled badly. It cut out at stop lights. It used too much gas. It proved to be as hard to get for a conventional passenger car as gold from Fort Knox.

The 1958 fuel-injection system is well-mannered, responsive and—mark this for future reference—increasingly easy on fuel. On cross-country safaris, it uses less than carburetors. Presently, it will use less on stop-and-go.

The racing camshaft of the original 283-cu-in. engine to which the fuel-injection system was fitted has been replaced with a "street" cam for ordinary driving. The fuel nozzles, fuel distribution and cold-start priming have been changed. The fuel cut-off on "over-run," when the car drives the engine, is eliminated—it succeeded only in draining the fuel system and killing the engine.

The result is an engine that reacts to the accelerator toe like a cat to a pinched tail. You search in vain for one of those familiar "flat spots" at hard throttle so common to carburetor engines.

Mated with Chevrolet's Turboglide automatic transmission, a three-turbine torque converter that has no gear "steps" in accelerating or decelerating, fuel injection supplies the smoothest power source presently available in any U. S. car.

It's still costly, but have patience. When field servicing experience is adequate, the sales broadsides will thunder and prices will drop.

That new 348-cu.-in. engine sends the horsepower soaring again. (And who doesn't remember when the Cadillac's 331 inches of only three years back was *some* engine!) At 280 horses, Chevy's new engine is an option. But don't take this thing, equipped with "three-by-two" carburetion —three two-barrel pots—at its face value.

The new engine was not designed for the division's passenger cars. It's for trucks. Like Ford, Dodge and Studebaker engines, Chevy's mills perform well in trucks, too. The Chevy management is pictured as a mite reluctant to make the mammoth new engine available for cars, but some of the customers will buy them, and the bigger the production, the cheaper the manufacturing cost.

If, however, anyone present believes

SURPLUS SALE

WAR SURPLUS
EXCESS INVENTORY
BANKRUPT STOCK

AUTOMATIC AC POWER PLANT

● Brand new leading standard make full automatic start-stop 1500-w 115-v 60-c power plant. Finest ball bearing direct drive. Hi-overload capacity. Makes ideal plant for emergency power failures. Also readily portable for camping trips, etc. Plant starts automatically when any load is switched on. Size 25x18x19 in. Wt. 125 lbs. List $465. SPECIAL ..... **$359.49** FOB

ELECTRIC CLOCK TIMER

● Finest 115-v 60-c electric clock timer. Shows exact time. Will sound built-in alarm at any pre-set interval. Easy to read numbers. Fine for mounting desks, radio, TV, etc. 3½" dial. Wt. 1 lb. List $12.50. SALE ..... **$2.89** Ppd.

AC-DC ELECTRIC GENERATOR

● Brand new unit suitable for light welder, battery charging, campers light plant, etc.

● Generates 100 amps at 30v DC and 1200-w 115-v 800-cycle AC. Marvelous buy! Govt. cost $295. ..... **$13.91** FOB

ELECTRIC CAR MOTOR

● Use golf or boys electric car. Geared 140 to 1. Run 6 or 12 volt auto storage battery. Easily reversible. Full instr. Wt. 24 lbs. Govt. cost $250..... **$19.46** FOB

EXTENSION TELEPHONE

● Hang-up type standard type phone. Mount on side of desk, on wall, etc. Ringer box (not shown) also furnished. Use as extra-answering set, call out, etc. Nearly new. Perfect. Govt. cost $19.50. SALE **$8.32** Ppd.

SENSATIONAL NEW SHOP AUTOMATIC STEAM CLEANER

● Amazing new top brand fully automatic oil burning 115-v AC steam cleaner. Generates high pressure steam in 90 sec. Using soapy fluid will clean dirty, greasy engines, motors, tools, etc. in seconds. Makes old engines look new. Fully guaranteed.

● Garages, filling stations, machine shops, contractors, large farms, etc. find it indispensable. To start or stop simply press button. No fires to light or valves to turn.

● **Dealers Wanted** in every community. Lowest prices in U.S.A. Size 32"x48"x20". Wt. 225 lbs. Complete, ready to use. Write for literature. SPECIAL ..... **$298** FOB

SPORTSMAN'S BARGAINS

● We have many amazing buys in leading brand sporting goods. Guns, knives, boats, etc. Here are a few of our Ppd. closeouts:

- ● $21 **Army Jungle Hammock Tent** **$6.95**
- ● $15 **Sleeping Bag**, nylon & wool 8.95
- ● $14 **Army Coleman Sing Burner Stove** 10.95
- ● $12 **Leading Make Spinning Reel** 6.98
- ● $10 **Top Name 2-Pc. Spinning Rod** 4.95
- ● $4 **Full Grain Hand Gun Holster** 1.99

LINESMAN'S CLIMBERS AND BELTS

● Genuine Govt. surplus new top brand standard pole climbers and safety belts. All leather straps, pads, safety belt, etc. Designed to fit average man. Learn to climb—wonderful opportunities at excellent wages, power, phone companies. Save 50%. Prepaid.

● **Linesman's Climbers** complete ..... Pr. **$7.91**

● **Linesman's Tool Belt & Safety** (not illustrated) **$11.29**

STORAGE BATTERY WINCH

● Powerful fully reversible ball-bearing gear reduction winch. 1000-2000 lb. pull. Use on 6 or 12-v battery. Holds 40' or ¼" cable. For trucks, docks, boats. Govt. cost $280 ..... **$46.75** FOB

SPECIAL OF THE MONTH!

NEW SUPER POWER ¼" DRILL

● New model, just released, genuine THOR Electric Drill. Full 2.5 amp. 110-v AC motor. Ball thrust bearing, geared chuck, fan cooled, precision design, suitable for finest shop.

● A real powerhouse equivalent to $35 super power drills. Use for drilling, polishing, sanding, etc. Has square front housing for special attachments. Fully guaranteed, money back. Special Ppd. Price (limited time only) **$14.96**

CONTRACTOR'S TILTING-LEVEL

● Combination tilting level with powerful achromatic 10-X optical lens, 360° horizontal index, sensitive bubble, full sharp focus control.

● Excellent for building, leveling, vertical alignment, setting poles, foundation work, etc. Complete with tripod, carrying case and plumb bob, full instructions. Made by leading instrument company. SPECIAL ..... **$59.50** Ppd.

HYDRAULIC SPEED REDUCER

● Variable hydraulic speed reducer. Any speed from 0 to 750 rpm by simply throwing a lever. Handle up to 1½ h.p. Use for midget cars, shop band saws, etc. Govt. cost $400. SPECIAL ..... **$47.81** FOB

OTHER OUTSTANDING SURPLUS BUYS

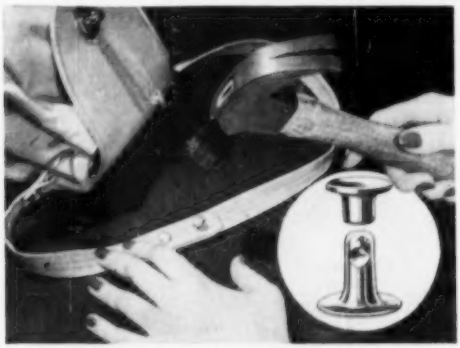
● Many other buys—air compressors, power plants, hydraulic pumps and cylinders, hose, plastic pipe, electronics. Most Prepaid.

- ● $66 **Govt. Gear Reducer**, 80 to 1 ..... $ 8.49
- ● $42 **Weston Circuit Volt-Ohmmeter** 19.87
- ● $27 **Oak Case Magneto Telephone**. FOB 8.97
- ● $195 **DC 3000-w 115-v Generator** ..... FOB 49.97
- ● $62 **Centrifugal Irrigation Pump** 1½" 24.61
- ● $11 **Fish and Worm Hand Shocker** 3.89
- ● $64 **Electric Centrifugal Pump**, 12-v DC 9.95
- ● $40 **Portable Ice Air Cond.** 110 AC ..... FOB 14.97
- ● $26 **Standard Dial Telephone** 9.95
- ● $195 **Personnel Elec. Car Motor** 12-v ..... FOB 14.50
- ● $97 **Govt. Wind Direct'l Velocity Unit** 14.95
- ● $10 **Govt. Quik Nets Car Safety Belt** 3.79

Order from ad or write for Free Catalog

FREE CATALOG

BURDEN SALES COMPANY
833 "O" St. LINCOLN, NEBRASKA



Repairs in a Jiffy with DOT *SPEEDY RIVETS*

Literally hundreds of uses! Make or mend luggage, footwear, clothing, household utensils! Quick, easy fastening of cloth, leather, plastic, thin metals! A simple swat with a hammer does the trick. Speedy Rivets are available in 2 sizes. Only 15¢ per card. At hardware counters most everywhere. Get yours now!

look for the DOT on the package

COLUMBIA FASTENER CO.
3229 S. Ashland Ave., Chicago 8, Illinois
Subsidiary UNITED CARR FASTENER Corporation

---

for the man who wants the BEST

TURNER® *Propane* TORCH

- Solder
- Remove paint and putty
- Lay tile
- Light charcoal
- Thaw pipes

Only **$5.95**

MULTI-TORCH CHEST

Includes 1 Turner Torch, 1 heavy duty burner, 1 chisel point soldering tip, 1 flame spreader. All in heavy steel chest.

$13.85 *value only* $9.99

TURNER *Propane Gas* **CAMP LIGHT $12.95**

TURNER PROPANE GAS STOVE $24.95

At hardware, automotive and sporting goods stores

TURNER BRASS WORKS
Sycamore, Illinois

NEW! DISCOVERY!
SAVES PLUMBING BILLS

CLEANS INSTANTLY

CHICAGO—Nov. 1st—Home Owners, Offices, Apartments, including **Factories** are constantly having trouble with clogged-up pipes which proves expensive in Costly Plumbing Bills—

But now—using **Water Impact** and **Air Pressure**, here is a new unit called the **Plumber's Flushing Gun**, which cleans all lines up to 100 ft. It will open any number of bends in pipe. Yet anyone can operate this new gun, which triggers easily.

TOILETS, URINALS, SINKS, and FLOOR DRAINS clogged with paper, grease, rags, sand, and other debris can be cleared with one or more shots from the gun, **saving the owner, the Gun's price the first time it is used.** This new Flushing Gun may be used on any ½ to 6 inch waste pipe including Sink Drains, Floor Drains, Hot Water Pipes, Drinking Fountains, Septic Tanks, and Urinals. Obstructions melt away INSTANTLY when struck by the hammer like blow of this new unit.

AMAZINGLY EFFECTIVE a hose **attachment** from the faucet (not shown here) leads water thru the Gun and pipe while at the same time air is released causing a Powerful Chain reaction.

This New Flushing Gun is offered on 30 Days Free Trial. BUT MOST IMPORTANT IS THIS—What is this Tool worth in **Costly Plumbing Bills** Saved in your Home or building? For your own good—Tear this Ad out now and write your name and address beside Ad for **FREE BOOKLET**. No agent will call—Obey that urge, mail now or write postcard (Chicago Phone Kildare 5-1702) **MILLER SEWER TOOLS, DEPT. PS-11, 4642 N. CENTRAL AVE., CHICAGO 30, ILLINOIS.**

NEW 1958 EDITION JUST OUT!

Get This Giant Catalog Of

WOOD
& WOODWORKING MATERIALS

TOOLS—PLANS—SUPPLIES

132 PAGES
Many in full color
packed with rare, fancy & imported woods ... veneers, plywoods, patterns, tools, ornaments, hardware ... everything for the woodworker.
MAIL COUPON NOW!

World's Largest Selection of Finest Domestic and Imported Woods ... Mouldings, Hardware Tools—ALL AT LOW MONEY SAVING PRICES!
Your complete wood buying guide and project book. Craftsman is your best, most complete source of finest kiln-dried domestic and rare imported woods, beautiful wood inlays, colorful bandings, matched plywoods, embossed mouldings, carved ornaments, newest woodworking tools, "hard to find" cabinet hardware and fittings ...more than 1,500 items! Packed with newest scroll saw patterns, project ideas and money making plans. Enclose 25c (refunded with first order) to help pay mailing, handling cost. Write
Craftsman Wood Service Co., Dept. B-11
2729 S. Mary Street, Chicago 8, Ill.

CRAFTSMAN WOOD SERVICE CO., Dept. B-11
2729 S. Mary Street, Chicago 8, Ill.
Enclosed find 25c. Rush new CRAFTSMAN WOOD CATALOG.

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Chevrolet—Lower, Longer, Livelier

that this engine is not being offered for passenger cars as a match for Plymouth's new 350-inch engine and the imminence of a Ford juggernaut, he may don the dunce cap in the corner.

Acceleration figures for the '58 Chevy with the big engine and Turboglide are: 0-60, 10.5 seconds; 50-65, 4.5 seconds.

Chevy still dotes, with justification, on its 283-inch engine, at up to 250 hp., for 1958. That's basic to the conviction of Ed Cole, the general manager, that a medium-size, short-stroke V-8—by definition a high-speed engine—can produce everything the average motorist needs. He parts company with those who argue for ever-bigger engines. Why, he asks, take the fuel-consumption penalty of a bigger engine, and then try to make up for it by cutting r.p.m.'s and lowering rear-axle ratios?

Moreover, all that weight annoys him. His engines weigh 75 to 80 pounds less than comparable ones of his competition. His cars are lighter, too.

"With today's suspensions," says he, "you don't need weight for a soft ride."

He should know, having worked in suspension for both Chevrolet *and* Cadillac in the past. Come to think of it, that may account for Chevy's Baby Cadillac. END

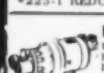
Cars Ride Piggyback in Alps

WHEN snow and ice close Swiss mountain passes, autos are detoured through Alpine tunnels on electric-railroad flatcars designed for safety. A frame of arched tubing intercepts and grounds current if the overhead power line breaks. Side rails keep car doors from opening while the train is moving.

WAR SURPLUS AND OTHER BARGAINS SAVE UP TO 90%

SPECIAL ON $4770 NAVY AIR-COOLED POWER UNITS Tremendous power package. Can be used as a portable or stationary unit. Makes terrific welder. 30D-1A Lawrence. 24V. 2 Cylinder opposed 4 cycle 10½ H.P. Complete with various generators. Net wt. 180 lbs. Gross wt. 250 lbs. Like NEW. With 140 Amp. 24 V. Gen. — **$125.** With 200 Amp. Gen. — **$137.50.** With AC-DC NEA5, DC side 24 V., 200 Amps.; AC side 10.5 Amps. 800 cycle — **$142.50.** 300 Amp. Gen. — **$142.50.**

140-1 REDUCTION GEAR For beaching boats, winches, hoists. Ideal for motor in golf or boys electric car. Built-in (removable) DC motor & clutch. Hi torque, lo speed. Runs on 6-12 or 24 V. Wt. 65 lbs. gross. Approx. GOVT. COST $300. Like NEW. **$12.00.** *225-1 REDUCTION GEAR, as above — **$13.50.**



BENDIX GEROTOR PUMP & MOTOR Use wherever fluid pumping required. Excellent for hydraulic installations. Has ¾" pipe connections, built-in relief valve adjustable up to 1500 lbs. Max. cap. 6 GPM. 1½ H.P., 24 V. motor. Use on 12 to 36 V. Approx. GOVT. COST $350. NEW. **$10.95.**

CHRONOMETRIC TACHOMETER Built to U.S. Navy & Air Force specs. Standard brand. For counting revolutions per min. for any rotating shaft. Can be used on speeds up to 3000 RPM. Accuracy to 1/10 of 1%. Complete with male & female tips & shock-proof case. GOVT. COST $87.50. NEW. Only **$21.98** ppd.

REVERSIBLE RATCHET WRENCH Hi torque. Delivers tremendous leverage. 4' handle with reversible ratchet. 4 hexagon nut sockets, 2 3/8", 2 9/16" & 3 1/8". Mfd. by Lowell. Approx. GOVT. COST $215 per set. Wt. 50 lbs. NEW. Only **$10.95** per set.

HEAVY-DUTY RHEOSTAT Ideal for regulating voltage on electric welders. Rated 5.75 Ohms, 100 Watts with double windings & dual female 25 amp. 125 V. receptacles. 7" hi x 5¼" x 1¾" D. Shpg. wt. 2½ lbs. Approx. GOVT. COST $25. Brand New. **$1.95.**

ARC WELDER KIT $27.95 Build your own complete make-up package incl. 1 Aircraft DC Gen. 200 Amps. 24 V.; Rheostat, Toggle Switch, 30' new welding cable, Electrode Holder, Welder's Shield, Voltage Reg. Wiring diagram for hookup as welder. Wt. under 100 lbs. Approx. GOVT. COST $475. Like new, perfect —**$27.95.** DC GEN., as above, purchased sep.—**$12.50.**

BUILD YOUR OWN ARC WELDER, LIGHT PLANT OR BATTERY CHARGER $39.95 Kit. incl. 1 Navy NEA-5 Gen. combination AC-DC type. AC 115 V. DC 24 V., 200-300 Amps. 2 complete generators in 1, yet no larger than reg. gen. Ideal for home, shop and farm lighting plants. Delivers 1200 Watts AC. DC side for charging batteries, welding and operating war surplus motors. Also in kit: 2 Voltage Regs., AC & DC, Reverse Current Relay, 30' new welding cable, Rheostat, Electrode Holder, Toggle Switch, Welder's Shield, Wiring Diagram for kit. Wt. under 100 lbs. Approx. GOVT. COST $650. Kit — **$39.95.** Navy NEA-5 Gen. as above, purchased separately, **$27.50.**

R1 GENERATOR KIT Jack & Heints or GE. Rated 300 Amps. 24-32 V. With same items as above. Approx. GOVT. COST $600. Complete 60 lb. kit — **$39.95.**

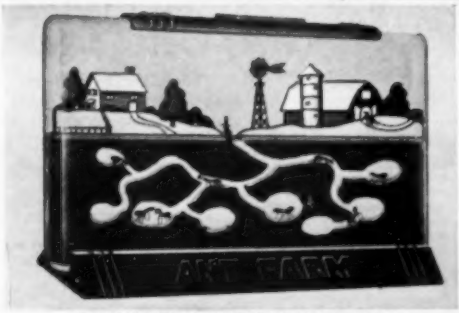
MICROMETERS Black crackle finish frame. Easy-to-read graduations in .001. NEW. 0-1" cap. **$2.69** ppd. 1-2" cap. **$3.79** ppd.

DUPONT EXPLOSIVE RIVETS Essential wherever blind riveting required. 1/8", 5/32", 3/16". Round & flat heads. Approx. GOVT. COST $50. 1,000 assorted for only **$8.00** ppd.

B-16 KOLLSMAN AIRCRAFT COMPASS Ideal for boats, cars, etc. Grad. in 5° increments. Liquid-filled. Lighted. Poly-plane compensator. Panel mounting. 3½" dia. face. 4½" deep. Checked & tested in our own lab. Approx. GOVT. COST $150. Like NEW. **$12.95** ppd.

NEW! TERRIFIC! 1958 CATALOG! Thousands of bargains in war surplus & other items. Hundreds of pictures. Send 25c for your copy today! Ppd. prices in USA only. Other prices FOB Culver City, Calif. Send cash, check or money order. 50% deposit on COD.

AIRBORNE SALES CO., INC. DEPT. PS1157
8501 Stellar Drive, Culver City, Calif



FASCINATING ANT FARM—$2.98

An ant's entire world seen through the clear plastic walls of this unbreakable, escape-proof ANT FARM. Have fun watching the busy army of worker ants digging tunnels, building bridges, moving mountains! Large 6" x 9" size. Includes barn, silo, windmill and barnyard where the ants can work and play. Actually a scientifically designed living TV screen that will keep the kids fascinated for hours. Educational! A generous supply of ants included FREE with every ANT FARM, together with a free book, "The Ant Watchers' Manual." Only $2.98 complete.

HOWARD STEVEN CO., Dept AH-12, 7015 Sunset Blvd., Hollywood 28, California.

BUILD YOUR OWN POWER TOOLS—

PLANS only $1.00 EACH POSTPAID

With GIL-BILT PARTS-PLAN KITS

10" TILT/ARBOR SAW

Sturdy wood, steel, and aluminum construction. NEW DEPARTURE ball bearings. Capacity and performance of floor saws selling for $150.00 and up. Plans, all metal parts in kit with 10" comb. blade $25.00, less blade $22.95. F.O.B. St. Louis.

12 IN. AND 18 IN. BAND SAWS

(12" only illustrated)

Ball bearing drive, rigid cast aluminum wheels, rubber tires. Rigid cast aluminum tilt and tension mechanisms. 18 inch saw handles stock to 6" thick, cuts to center of 36" circle. Extra large tilting tables. Capacity and performance of band saws selling for $80 to $300. Plans and all metal parts for 12" band saw $23.95. Plans and all metal parts for 18" band saw $39.95.

For shipments up to 600 miles, add 5%, over 600 add 10%. Amount in excess of actual postage will be refunded.

Also Build-It-yourself 6" Belt Sander, Shaper, 8" Tilt-Table Saw Simplified plans, build easily with hand tools only. Advertised and sold for 10 years over 33,000 units in use. Money back Guarantee. FREE CATALOG.

GILLIOM POWER TOOLS Dept. 70-L, Lambert Field St. Louis 21, Missouri

stock your Shop

• SCREWS
• BOLTS
• NUTS

ELCO DraweRack without boxes

EASY TO GET AT! EASY TO GET OUT!

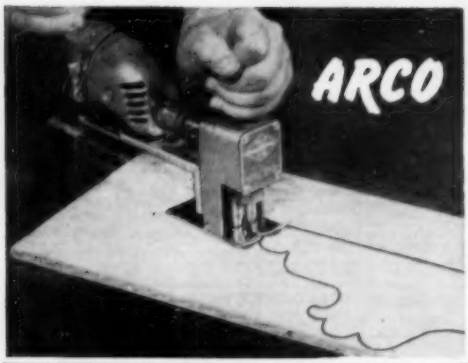
Buy your screws in these handy, sparkling, clear-plastic drawer-boxes! Generous quantities of top-quality fasteners at 59c per box. Keep them in the ingenious, multi-purpose DraweRack storage system — ready for quick selection and instant use! At your hardware store . . .

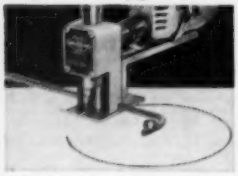
ALL WOOD SCREWS ARE **SPEEDIZED** FOR EASY DRIVING INTO EVEN HARDEST WOODS

59¢ PER BOX

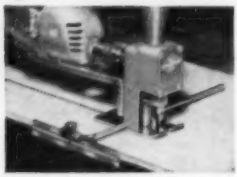
ELCO TOOL & SCREW CORP. ROCKFORD, ILLINOIS

"ARCO JIG-SAW" cuts any shape, any material!





Cuts Perfect Circles with Exclusive Circle-Cutter



Makes Straight & Parallel Cuts with Exclusive Rip-Gage.

"Arco Jig-Saw", guaranteed to fit every 1/4" drill, cuts any pattern in wood, plastics, metals—even cuts **2x4's!** Has same capacity and outperforms the most expensive saws because of **ARCO'S exclusive adjustable Circle-Cutter** (up to 20" diam.) and **Rip Gage.** Cuts its own starting hole. "Air-Jet" blows away saw-dust. With blade. **$10.95**

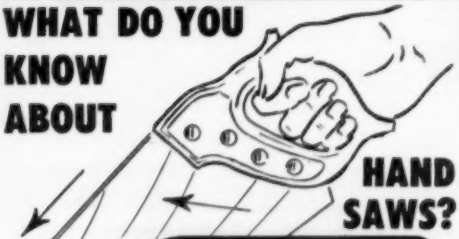
6 Extra Assorted **Blades** for wood, plastics, metals..... **$1.95**

At Your Dealer or order direct on our **Unconditional 10-day Money Back Guarantee.** Send check, M.O. (ppd) C.O.D. plus post.

ARROW METAL PRODUCTS CO.

DEPT. PS-11, 421 WEST 203 STREET, NEW YORK 34, N. Y.

WHAT DO YOU KNOW ABOUT HAND SAWS?



TAPER GRINDING

Two-directional taper grinding means that the blade is thinner at the back than at the tooth line —and tapers from handle to tip. Proper taper grinding gives the blade better clearance in the cut reducing friction and ensures perfect balance and flexibility. SANDVIK Swedish steel hand saws all feature taper grinding over the entire blade . . . a feature found only in top quality saws.

If you'd like to know more, write today for free booklet *"Things You Should Know About Hand Saws"*. Write Dept. PS

Sandvik STEEL, INC.

Saw & Tool Division

1706 NEVINS ROAD, FAIR LAWN, N.J.

IN CANADA: P. O. Drawer 1330, Station "O", Montreal 9, P.Q.

HANDEE

A COMPLETE WORKSHOP IN YOUR HAND

The powerful new Hi-Torque HANDEE grinds, polishes, cuts, saws, engraves, burnishes, cleans. A necessity in every workshop. Works in wood, hardened steel, non-ferrous metals, glass, ceramics. Packed with power and speed (25,000 rpm). Cool running, fits the hand for pencil-point precision. 110 or 220-v. 25 to 60 cycles AC or DC.

with 6 accessories **$23.95**

TOOL OF 1001 USES!

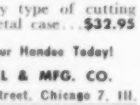
With every type of cutting tool in metal case . . . **$32.95**

Order your Handee Today!

CHICAGO WHEEL & MFG. CO.

Dept. PS-11, 1101 W. Monroe Street, Chicago 7, Ill.

PLANS • PATTERNS • FRAME PACS



World's Largest Selection. Over 200 new plans, Full Size patterns, frame pacs. Designed for the amateur. Prams, racers, cruisers, utilities, inboards, outboards, in wood, plywood, steel. New longitudinal stressed models with revolutionary bulkhead construction. Light, super strong.

Send 35¢ for 120 pg. PLAN CATALOG

Catalog plus Boat Building Handbook.....$1.00

SPECIAL OFFER... Plan Catalog ... plus Hardware and Accessories catalog.....$1.00

SPECIAL!

- 120 PAGE PLAN CATALOG PLUS
- 200 PAGE "BOAT BUILDING FOR THE AMATEUR" COVERS
- BOAT BUILDING
- FIBER-GLASSING
- OUTFITTING, ETC.

Only $2.50

CUSTOM-CRAFT-BUFFALO 7, N.Y.

Print Your Own

Cards, Stationery, Advertising, Circulars, labels, photo and movie titles, church work, tags, etc. Save money. Sold direct from factory only. Raised printing like engraving, too.

Own a Printing Business

Print for Others, Good Profit. Have home shop. Junior press $15; Senior $29 up. We supply everything. Easy rules. Pays for self in short time. Write for free catalog of outfits and all details.

KELSEY PRESSES, C-33 Meriden, Conn.

THE CHRISTMAS GIFT FOR LIFETIME ENJOYMENT

WELD IT YOURSELF IN A JIFFY!

Weld, Cut, Braze, Solder; Iron, Steel, Brass, Bronze, Aluminum and other metals safely and easily. Make your wrought iron furniture, porch railings, fences, knick-knacks and other metal specialties. With this fine equipment anyone can do professional-like work with little practice. The Dynamic is an industrial type transformer arc welder designed to operate from any properly wired 110 volt AC line.

NOW as a FALL SPECIAL you will receive an $8.00 Twin Carbon Arc Torch FREE to complete your welding workshop. Order TODAY!

Literature on larger equipment available on request.

EASY PAY PLAN

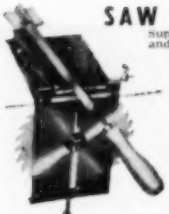
Low down-payment. Pay as you weld. Money back guarantee. Complete outfit, including special FALL GIFT.

Only $38.50

F.O.B. Factory

DYNAMIC WELDER COMPANY, 1808 S. Federal Street, Dept. D3-M, Chicago 16, Illinois

SAW SHARPENING IS EASY



Super Filer No. 11 joints and sharpens hand and circular saws 6" to 10" with all teeth correct in height depth, pitch, bevel. When file hits hardened steel roller, teeth are finished. Saw runs true with no side pull. Includes 8" file. **$9.95 PPD.**

"TRU-CIRCLE" saw set automatically sets teeth at 10° or more. **$2.95 ppd.**

DOWEL CENTERS Centers inscribe exact location for opposite holes. Pairs for 1/4", 3/8", 1/2" holes. **$1.00 ppd.**

SUPER SAW FILER NO. 6 Automatically controls depth, angle, pitch for all saws. Precision made and calibrated. Use in any vise or clamp. Includes file. **$6.50 ppd.**

MONEY BACK GUARANTEE—CATALOG FREE

D. McBURNEY, 5908 Hollywood Blvd., Hollywood 28, Cal., Dept. S-117

QUICK-SET SCRIBER $1.50

New—scribing tool for sheet metal workers, carpenters, industrial craftsmen—excellent for marking floor tile to trim. A quick-set-scriber with two fixed settings at any one time—adjustable to any setting up to 6" calibrated in 16ths. Tool is hardened and plated.

QUICK-SET SCRIBER P.O. Box 3066 Waterbury, Conn.

DRAINS cellars, cisterns, wash tubs; IRRIGATES - CIRCULATES - SPRAYS

Type P Pump has 1,001 uses. Up to 5,000 GPH: 150 GPH so high or 1800 GPH from 25' well. Use 1/6 to 3/4 HP motor. Coupling included free. 1" inlet; 3/4" outlet. Stainless shaft. Won't rust or clog! **Heavy Duty Ball-Bearing Pump.** Up to 7,500 GPH. 1½" inlet; 1" outlet. **$7.95** **$12.95**

Postpaid if cash with order. Also other sizes, types.

MONEY BACK GUARANTEE.

LABAWCO PUMPS, Belle Mead 3A, N. J.

Lowest Price **WATER SYSTEM** Completely Automatic! **$49.95** less motor. With 1/2 HP motor, $69.95. Bronze Gear Pump 275 GPH. 20-40 lbs. 3/4" fittings. Free Circular

Heavy Duty Bench Type ALLEN PUNCH PRESSES

Model B-5 5 Ton **$199.50** f.o.b. Less motor

164 Different Model Combinations 1 to 5 ton capacities Moderate in price Fully guaranteed

See your supply dealer or write for Free catalog giving complete information and prices on our Bench Type Punch Presses.

ALVA ALLEN INDUSTRIES, Dept. PS, Clinton, Mo.

GEARS

In Stock—Immediate Delivery

Gears, speed reducers, sprockets, thrust bearings, flexible couplings, pulleys, etc. A complete line is carried in our Chicago stock. Can also quote on special gears of any kind. Send us your blueprints and inquiries.

Send for Complete Catalog No. 220

CHICAGO GEAR WORKS

440-450 N. Oakley Blvd. Chicago 12, Ill.

GENUINE ALNICO MAGNETS

AMAZING, PERMANENT, NON-ELECTRIC, HIGHLY PRACTICAL. Conduct interesting experiments. Hundreds of uses. Retrieve valuable steel items such as guns, tackle from fresh or salt water; tools from tanks & drains. **GUARANTEED.** Try any magnet one week. Money back if you are not well-pleased.

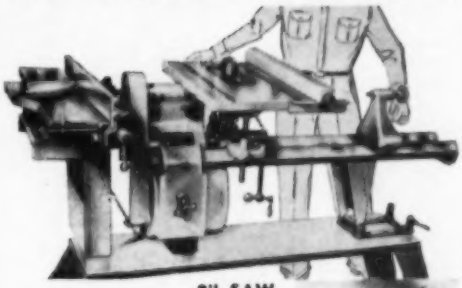
No. S-710 (Wt. 53 oz.) Has pull of 225 lbs. on steel block $16.50
No. S-625 (Wt. 70 oz.) Has pull of 125 lbs. on steel block $ 9.50
No. S-575 (Wt. 18 oz.) Has pull of 75 lbs. on steel block $ 6.50
No. S-500 (Wt. 13 oz.) Has pull of 50 lbs. on steel block $ 4.50
No. S-300 Kit of Flat Bars 5 Pairs (10 Magnets) $ 3.00
No. S-250 Kit of Round Rods 5 Pairs (10 Magnets) $ 2.50
No. S-47 Hot Pad Magnets. 10 for $1.00 ..... $0 for $ 4.87
No. S-35 Hobbyist assortment of 8 small magnets $ 1.50

Send M.O. or check. We pay postage. Sorry no C.O.D.'s.

MIAMI MAGNET COMPANY, 3240 N. W. 27th Ave., Miami 42, Fla.

LOOK! All New - All Precision - All Deluxe

SUPERSHOP MODEL X



WE PAY ALL FREIGHT FOR YOUR FREE HOME TRIAL

8" SAW ONLY $139.50 EASY PAY PLAN

Vert. Drill Press

Never before have you seen so much deluxe, precision-built power tool workshop at any price! Designed for the man who wants the best. Massive cast and precision-machined headstock, self-centering inverted "V" bedways (like precision metal lathes), exclusive non-friction speed changer, extra-large cast and precision-ground saw table. 100% ball bearing, lifetime-lubricated. You save by ordering direct from factory. You are invited to test Supershop Model X in your home FREE. Mail coupon or postcard for FREE brochures, photos, details, specifications, accessory list — and amazing freight prepaid FREE HOME TRIAL PLAN. All free.

Hor. Drill Press

8" Sander

30" Lathe

5" Grinder

MAIL COUPON OR POSTCARD TODAY

POWER TOOLS, INC. 201 Yates Ave. Beloit, Wisconsin

NAME_____

ADDRESS_____

CITY_____ STATE_____

Schupack's Amazing Tool Bargains! Save up to 100%!

75 Mounted Wheels & Miniature Cutters. Regular $11.00 value $4.50 Postpaid

For cutting and grinding on wood, metal or plastic. Includes 26 mtd. wheels and points on 3/32" shanks; 24 miniature cutters on 3/32" shanks; 25 short shank min. cutters. Will fit all electric drills and hand grinders.

FLEXIBLE SHAFT—ONLY $6.50 Postpaid

Fits all electric drills & hand power tools. 35¾" long. Oilite bearings. Core of specially wound, high carbon steel wire in flexible steel casing. Will accommodate tool shafts up to 1/8" dia. For lathes, electric drills, etc.

2 DRUM SANDERS With 12 Bands in Assorted Grits. 1½" dia. x 1" long on 1/4" arbor with 12 bands. . . . . $1.50 Postpaid. One drum, 1" dia. x 1" long on 1/4" arbor with 6 extra sleeves $1.00 Postpaid

8 Carbon Steel Wood Bits for Brace. Assorted sizes 3/32" to 3/8", for drilling on wood or metal. $1.75 P.P.

15 Assorted Drills. From 1/16" to 1/2" high speed steel and carbon. Only . . . $3.95 P.P.

30 Assorted Drills. Hi-speed steel & carbon. Up to 1/4" dia. . . . . $2.75 P.P.

12 Assorted Drills. High speed and carbon steel from 1/8" to 1/2" $3.60 P.P.

12 Miniature Cutters. For cutting wood, plastic or metal. Assorted shapes on 3/32" shank $1 P.P.

ELECTRIC HAND GRINDER Fits in the palm of the hand and has an air-cooled motor that runs at 20,000 rpm AC or DC at 110 volts. Comes complete with both 3/32 and 1/8 inch Collets, cord and plug. $11.50 P.P.

12 MOUNTED WHEELS and points on 1/8" Shank $2.95 7.50 p.p. 35 for

For grinding on plastic, wood, soft & hard metals. Regular Value $8.40. **18 Mounted points on 3/32" shank $2.50; 12 mtd. wheels on 1/4" shank $2.60.**

ADAPTER CHUCK

With 2 interchangeable collets, opening from 3/32" to 0, on 1/8" mandrel. $1.50 P.P. Price each only . . . . . **Adapter Chuck. From 60 to 80 on 3/32 in. Mandrel $1.00**

7 H.S. and carbon drills from 6" to 12" in length. Assorted sizes up to 1/4" diam. for drilling in hard to reach places. A reg. $1.95 P.P. $10.00 val. for only . . . . . **7 Larger Drills.** From 1/4" to 1-1/64". High speed steel and carbon. $7.50 P.P.

5 woodworkers Drills. From 1/4" to 3/4" on 1/4" shanks. . . . . $2.95 P.P.

2 Circular saws. On 2 Mandrels—all at one low price. 1" diameter saws on 1/8" Mandrels. For cutting wood, plastic or soft metals. $1.50 P.P.

24 H.S. steel drills. threaded shanks from 3/32" to 1/4". Reg $9.50 value only . . . $2.00 P.P.

18 Rotary Cutters $5.85 P.P.

Assorted sizes cutter on 1/8" or 3/32" shank. Will fit all hand grinders. Ideal for cutting wood, metal, or plastic. Brand new.

SPECIAL—100 PIECES for ELECTRIC GRINDERS Grinding Wheels, Cut-off Wheels, Sanding Discs, Mounted Stones, Honing Stones, Rotary Cutting Burrs, Mandrels and other Items. $1 P.P.

No C.O.D.'s. Catalog 10c.

SCHUPACK SUPPLY CO. 7331 COTTAGE GROVE AVE. DEPT. S-70 CHICAGO 16, ILL.

Sharpen ALL CIRCULAR SAWS THE QUICK-WAY* *patented

Model PG-12 Complete No extras to buy. $19.95 Postage Paid

Sharpens, joints, gums and retooths all cross-cut, rip, standard and master combinations, miter, planer and radial saw blades to 12" diameter. Precision sharpening guaranteed by special Index Dials. New safety guide prevents tilting or gouging. Mounting block and special $3.00 grinding wheel furnished. Fits bench, table and radial swing saws.

Thousands of satisfied users. Featured in leading publications. Order today. Send check, cash or money order. We pay postage in U.S.A. Free Booklet "How to Sharpen Circular Saws."

QUICK-WAY SAW CO.
134 Tompkins Street Cortland, N.Y.

FREE WHOLESALE CATALOG get up to 50% off

MAKE MONEY! SAVE MONEY!! Buy Tools, Hardware, appliances, photo equipment, sporting goods, power tools, paints and thousands of other nationally advertised products at WHOLESALE COST TO YOU.

"SEND FOR FREE 1957 WHOLESALE CATALOG TODAY"

SILVO HARDWARE COMPANY
Dept. PS-11, Box 266, Phila. 5, Pa.

EXPLORE FOR TREASURE!

Find gold, silver, coins, jewelry, battle relics! Treasure-Metal-Mineral Detectors. M-SCOPE. Used worldwide. Also, Geiger, Scintillation Counters, Mineralights. From $14.75. GUARANTEED. Time Payment Plan. FREE Treasure, Uranium information. FREE Treasure Outfitting catalog. FISHER RESEARCH LAB., INC., Dept. PS-2, Palo Alto, Calif.

NOW! CUT CIRCLES WITH YOUR CIRCULAR AND BAND SAW!

CIRCLE MASTER

The amazing CIRCLE MASTER, a new patented attachment, will permit you to cut all circular shapes on any make bench saw. Simple to use, CIRCLE MASTER enables you to cut a perfect, clean and smooth circular shape. Cuts a diameter adjustable up to 30" on small saws, even bigger on large saws. You can make chairs, table tops, wheels, trays, lazy susans, stools, coasters . . . anything that calls for a circular shape. You can make cove cuts, beveled cuts, shoulder cuts, moulding cuts and many others depending upon blade used. You must be completely satisfied or your money back.

Send Check or money order. We pay postage. Only $4.95

AMERICAN HOME TOOL CORP.
DEPT. 11 • 350 BROADWAY • NEW YORK CITY

at a price YOU can afford | TRANSMIX UTILITY MIXER

Mixes while transporting • Dumps hydraulically • Attaches in minutes • No holes to bore • No gears • 1 or 1½ bag capacity • Eliminates wheelbarrows • Unconditional guarantee • For complete FREE folder, write:

UNIVERSAL PULLEYS COMPANY
343 N. Mosley, Wichita, Kansas

NEW, IMPROVED CALCULATOR FOR WOODWORKERS only 25c

Instantly gives information on lumber, nails, concrete mixes, painting materials, etc. Convenient, simple to read. Just set dial for nail specifications, to convert linear to board feet, find bit sizes for screws, compare characteristics of woods. 6" diameter heavily varnished cardboard. Send 25c, no stamps, please to Greenlee Tool Co., 2131 Columbia Avenue, Rockford, Illinois.

Ideal Christmas Gift For Any Man

WELD BRAZE SOLDER CUT

4 WAY WELDER ONLY $14.75 f.o.b. factory

Complete with Twin Carbon Arc Torch and accessories . . . to handle all metal-craft work.

Acclaimed by thousands of Homeowners, Mechanics and Hobbyists as the welder of 1001 uses. Easily operated from properly wired 110 volt AC or DC line. **The ideal gift with a life-long use** . . . Order today on 10 day money back guarantee.

FOUR-WAY WELDER CO., Dept. F3-M
1810 S. Federal St. • Chicago 16, Ill.

NEW

Special 12 Pc. SPORTSMAN'S KNIFE

4⅝" BONE HANDLE

Eliminates 12 Items from Pack or Tool Kit

2.95

12.95 VAL.

COMPLETE WITH LEATHER BELT CASE

Here is the Perfect Combination Knife-Tool for every Outdoor Man. 11 Fine Quality, Steel Tools precision made to fold easily into the heavy bone covered body. In this one compact unit you have (1) regular knife (2) a fork (3) a spoon (4) a draw-knife (5) a bone saw and fish scaler (6) scissors (7) can & bottle opener (8) cork-screw (9) punch (10) screwdriver (11) metal file.

BINOCULAR BONANZA

Our Volume Buying has made it possible to offer these remarkable Binocular values to you in time for Christmas Gifts. SAVE! Ideally suited for Sportsmen of all types. Huge 50mm objective lenses give clear and precise sight even under the poorest light condition. Lenses are precision ground & polished – fully coated for maximum brilliance. Field of view 375 ft. @ 1000yds. Made by the finest Japanese Craftsmen. Complete with genuine leather case & straps. A $45.00 value . . . . .

7X50 Palley HUNTSMAN

INDIVIDUAL FOCUS 19.88

CENTER FOCUS NOW 22.88

NEW 6X 30mm BINOCULARS

Ideal for the viewing of spectator sports, fowl hunters, bird watcher, etc. Has large field of view – 390 ft. at 1000 yds. All air-to-glass optical surfaces are fully coated for increased brilliance & clarity. Lenses are fully Achromatic & color corrected. Complete with leather case & straps. 39.00 VAL. 11.88

2½x - 4x or 6x RIFLESCOPES

10 DAY MONEY-BACK GUARANTEE

YOUR CHOICE! SAME PRICE! (INCLUDING MOUNT)

2½X – Overall lgth. 9¾" 30 ft. field of view at 100 yds.

4X – Overall lgth. 9¾" 30 ft. field of view at 100 yds.

6X – Overall lgth. 10¾" 10 ft. field of view at 100 yds.

NEW PAL-MASTER SCOPES for TARGET • BENCH REST or HUNTING

Choice of 3 different powers at the same LOW PRICE! 9.95 WITH MOUNT

COMPARE THESE QUALITY SCOPE FEATURES:

1 – ADJUSTMENTS Positive Internal Direct reading Windage & Elevation Knobs

2 – LENSES Top quality Optical Glass – precision ground, polished, color corrected, no distortion, hard coated glass-to-air surfaces.

3 – EYE RELIEF 2½" to 4½" Safe on heavy recoil.

4 – RETICLE Sharp, Clear Cross-Hair.

5 – FOCUS is Lock-Tight. Won't "shoot off."

6 – BARREL Rust-proof, Extra Durable Steel.

7 – Guaranteed to perform perfectly on ANY RIFLE.

8 – Made by leading American Optical firm.

MOUNT INCLUDED with SCOPE

SIDE or TOP MOUNTS available with scope to fit most rifles. When ordering specify type mount, gun model number and brand.

3400 RPM-½ HP POWER SAW

RIPS - CROSSCUTS

CUTS A FINISHED 2x4 LIKE A KNIFE THROUGH BUTTER

COMPARES TO SAWS SELLING UP TO $49.50 19.98 Complete with 5-1/2" Blade

A rugged, professional type, adjustable saw. Will cut any angle from 0 to 45°. Has an adjustable (0 to 6") rip fence. Safety-trigger switch on handle. Full ½ HP Universal AC DC, 110-120 Volt, 60 cycle motor. Weighs only 6½ lbs.

EXTRA SAW BLADES – Available in Rip, Crosscut or Combination. Please Specify ONLY 2.25 EA

AMAZING 396 Pc. BARGAIN CATALOG

NATIONALLY ADVERTISED MERCHANDISE • NEW and USED GOV'T. SURPLUS • FACTORY CLOSEOUTS • EXCITING IMPORTS!

From EVERYWHERE PALLEY'S brings you items of every description. Camp & Sports Equip., Marine Supplies, Cameras, Optical Specialties, Hand & Power Tools, Building Supplies, Do-It-Yourself Supplies, PLUS so many more it's impossible to list them.

Send 50¢ (for handling & mailing) 50¢ REFUND on your first order of $1.00 or more

SAVE up to 85% at PALLEY'S

WAR SURPLUS

PALLEY SUPPLYS

ORDER-BY-MAIL

Palley's 2263 EAST VERNON AVE., DEPT PS-11 • LOS ANGELES 58 CALIF

TERMS: Send Check, Cash or Money Order. 50% Deposit with C.O.D.s. Prices F.O.B. Los Angeles, Calif. Warehouse.

SAVE OVER 50% ON XMAS BARGAINS

FREE! WORLD'S SMALLEST MICROSCOPE 150 POWER

FREE WITH YOUR PURCHASE OF $10.00 OR MORE

A newly developed import – Truly an amazing instrument! Compact, extra-light-weight. Can be carried in pocket or purse. Patented lens provides a full 150 power magnification plus fully corrected light refraction and an automatic light concentrating device. Size: 1-1/2"x1-1/2". Weight: 1/2 oz. Ideal for Scouts, Teachers, Parents, Schools, etc. FREE with $10.00 purchase or send . . 1.95

AMAZING NEW SCIENTIFIC DESIGN

60 to 600 POWER – 2 EYEPIECE

SPECIAL MICROSCOPE

HAS 60 - 150 - 200 - 300 - 400 & 600 POWER MAGNIFICATION WITH ILLUMINATED SUB-STAGE MIRROR and TRIPLE TURRET

Now you can change magnification with a simple shift of the dual eyepiece turret. No loss of focus – No readjustment. You choose either 10X or 15X eyepiece to use in an instant with any of the three objective lenses.

NOTE THESE FEATURES

All lenses are precision ground and polished. Has triple revolving turret with 8X, 20X and 40X lenses – Dual eyepiece has 10X and 15X lenses – NEW patented sub-stage with battery operated light . . . no external light source is necessary – Large sub-stage has a revolving, variable iris – Body is ALL-METAL and is designed to incline through 90°. Comes complete with fitted wood case and 3 glass slides. . . . . 14.95 XMAS SALE

HAS 60, 120, 150, 180, 300 and 450 POWER MAGNIFICATION

SPECIAL 60 to 450 Power MICROSCOPE

With NEWLY DEVELOPED SUB-STAGE LIGHT which ELIMINATES NEED for ANY EXTERNAL LIGHT SOURCE.

Another Palley Optical Bargain. Ideal for scientific inclined Boys & Girls, Adults, Home labs, etc. Has precision ground and polished lenses. Two interchangeable eyepieces of 6X and 15X – Triple revolving turret with 10X, 20X and 30X lenses – Patented sub-stage mirror with self-contained light for use without external light source plus large sub-stage mirror for use with external light source when desired – All metal body which inclines through 90° – Fitted wood case and 3 glass slides. Order WHILE STOCKS are COMPLETE!

FREE with MICROSCOPE 8-PIECE DISSECT SET. Has Scalpel, Scissors, 6 Slides, Tweezers, Magnifying Glass, etc. . . . . Now 10.95

100 - 200 - 300X MICROSCOPE

A triple revolving, objective lens turret allows selection of 100, 200 or 300 POWER magnification. Has fine, ground and polished lenses and ALL METAL construction. This instrument is NOT A TOY! Right or left hand rack & pinions make smooth, precise adjustments. Now 6.95

25 POWER x 30 MM TELESCOPE & TRIPOD

$25.00 VALUE

Specify WHITE, BLACK OR CRACKLE FINISH

PIGSKIN CASE for above $2.00 extra

Nowhere but at PALLEY'S can you find a buy like this! Here's a scope, complete with a sturdy metal tripod, that you can have a lot of fun with. Use it to spot hits on the target, for star-gazing, interesting views at the beach, etc. Made of aluminum and chrome plated brass. Field: 63 ft. at 1000 yds.

ONLY 5.95

20 POWER x 40mm SPOTTING SCOPE WITH TRIPOD & CASE

NEW 29.95 VALUE

IDEAL FOR HUNTER-TARGET-ETC.

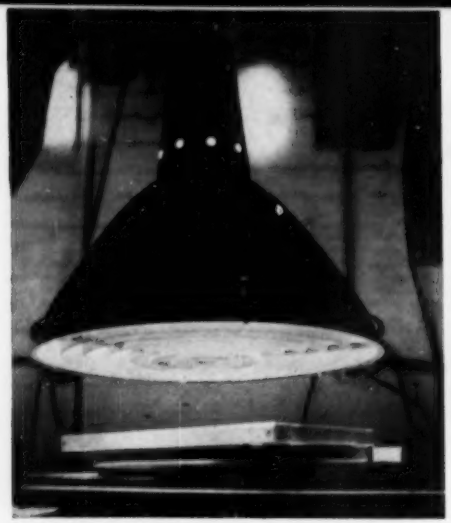
Imported directly by Palley's. The finest spotting scope for the money that we have seen. A FULL 20 POWER MAGNIFICATION yet small enough to fit easily in your gun case, knapsack, etc. Has precision ground and polished lenses and prisms throughout. With fully coated objective lens. Eye-piece is fully adjustable. Comes with a sturdy tripod and special leatherette carrying case with zipper enclosure. Weighs only 15 ozs. Overall length 8¼".

SPECIAL AT 17.98

NEW IMPORT

5X ILLUMINATED MAGNIFIER

Gives brilliant illumination for precise inspection of any material, substance or specimen. The head contains a large 50mm lens and has an internally calibrated scale to show relative size of subject. All-metal body holds 2 flashlight batteries. A 7.95 value. . . Only 3.99



ULTRAVIOLET LIGHT transfers picture image from special negative to photosensitive crystal.

AFTER SEVERAL HOURS, frame holding crystals is taken from light by developer Norman Mernoff.

HEAT AT 1,200 DEGREES in electric furnace brings out the positive image in the crystal.

QUARTERED CRYSTAL (in upper hand) shows undistorted image appearing all through material.

Photos Printed in Crystal

Now you can have a portrait printed in, not just on, crystal. Using a photosensitive crystal made by Corning Glass Works, Norman Mernoff has developed a method that embeds the image in the substance. At his plant, Dornel, Inc., New York, he exposes crystal and negative to ultraviolet light up to 85 hours depending on size, then bakes the crystal in an electric oven to bring out the image. One print, in a Marchal Jewelers setting, won a top national diamond-show award.

PORTABLE LIGHT PLANTS

GIANT 2500 WATT PLANT

110-120 v. 60 cyc. AC. absolutely the best made — exclusive dynamically balanced armature; heavy windings develop up to 5000 watt overload for motor starting. Skid mounted — portable. Powered by an easy starting Briggs or Wisconsin 6 HP engine—complete with all accessories; engine easily disconnected for other uses. Big outlet box, voltmeter, no wiring necessary. Ample current for all purposes. Factory warranty. (Item 31) Wt. 210 lb. Reg. price $585. Special at..... **$299.50**

Same plant with electric self starter (Item 31a)..... **$359.50**

Generator only and control box..... **$169.50**

DUAL VOLTAGE 110-220 available on any of above models for $28.00 additional.

POWER-FLO 3500 WATT

(Item 198)

115-230 v. 60 cyc. AC. A rugged power plant for heavy duty use. Duplex power distribution provides both 115 v. and 230 v. output at the same time if desired. Powered by a big 8 HP Wisconsin engine with triple V belt drive. Has built-in overload protection. A dependable plant for either standby or regular service. Equipped with electric self-starter. (Can also be started by rope) and plug-in outlet box. (Item 198) Wt. 310 lbs. Factory price..... **$439.50**

GENERATOR ONLY belt driven..... **$230.50**

HEATING & VENTILATING FAN

(Item 10) Easily installed in furnace pipes. Forces even heat to all rooms. Over range removes kitchen smoke and odors. Powerful, continuous duty motor, 110-120v. AC. Mount in wall or ceiling to ventilate any area. Quiet, super-efficient fan moves huge volume of air. (400 to 600 CFM.)

8" Pipe, wt. 5 lb..... **$6.85**
9" Pipe, wt. 6 lb..... **$7.85**
10" Pipe, wt. 7 lb..... **$8.85**
12" Pipe, wt. 8 lb..... **$9.85**

HEAVY DUTY FAN. Semi-enclosed motor, suitable for spray booths, restaurant exhausts, poultry houses, etc. 10" Fan, wt. 8 lbs. (Item 10E)..... **$11.95**
12" Fan, wt. 10 lbs. (Item 10B)..... **$12.95**

HIGH SPEED BARN FAN similar to above, but larger, high speed motor moves huge volume of air.
12" Fan (Item 10f)..... **$14.95**
14" Fan (Item 10g)..... **$17.95**

GIANT METAL SHEARS

"PEXTO"

Nine inch cutting blade made of special high carbon alloy steel, perfectly aligned and ground. Easily cuts steel plate up to 12 gauge or 1/8" bar. Overall length 40½". Wt. 23 lbs. (Item 156) Regular $49.50. While they last..... **$14.95**

MASTER DC ARC WELDERS

(Item 280)

Now! a portable rugged, industrial type welder with terrific performance, yet at a price hundreds of dollars less than you'd expect. Senior model made for years of trouble-free, continuous service. High capacity DC welding unit enables you to tackle any job with confidence—easily welds anything up to 2" plate using from 1/16" to 1/4" rods. Built-in stabilizer and cooling system makes arc easy to strike and hold. Dual control rheostat provides low heat soldering, brazing and welding from 30 to 300 amps. Complete with instructions, guarantee and triple V-belt or flat pulley. Easy to hook up and easy to operate.

WELDER ONLY — DUAL CONTROL MODEL. Same as above, but drive with your tractor, jeep or gas engine of 14 HP or more. (Item 38a.) Wt. 110 lbs. $450 value..... **$119.50**

WELDER ONLY—INDUSTRIAL MODEL same as above but with ceramic rotary type rheostat providing 74 different heat settings for all types of welding (Item 38b) $500.00 value..... **$139.50**

COMPLETE POWER MASTER (Illustrated above) powered by a 16 hp., air cooled Wisconsin engine. Wt. 480 lbs. (Item 280) Compares with welder costing $1200. Factory Special..... **$449.50**

WELDING KIT Two 10 ft. leads, welding helmet, electrode holder, ground clamp. Sold only with welder at... **$10.50**

SAVE middleman profits BUY DIRECT from MASTER MECHANIC factory

(Item 24)

700 WATT PLANT

PUSH BUTTON START

115 v. 60 cyc. AC Powered by a rugged 2.2 HP. easy starting Briggs engine. No wiring necessary; just plug in and operate. Plenty of current for any oil burner, freezer, blower, emergency lights, etc. which require up to 700 watts. Ideal for television and radios. Complete with voltmeter and built-in winding to charge auto batteries. (Item 24) Wt. 75 lbs. Easily fits in car trunk. Be prepared if storm knocks out power lines. Regular $275.00 value..... **$143.50**

1200 Watt Plant (Item 45) same as Item 24 but larger generator and engine with 50% greater output..... **$199.50**

We make every type and size of light plants —Write, giving us your requirements!

BATTERY CHARGING GENERATOR

Push Button Start

A husky, 750 watt plant (designed for battery charging only) that will charge 6 or 12 volt batteries in just minutes! When mounted with two 6 volt batteries it provides a terrific cold weather motor starting unit, as well as a fast charger! Charges all batteries anywhere — no hi-line current needed. Ideal for service stations, garages and farms. Comes complete with ammeter and cutout. (Item 821) Wt. 120 lbs. Regularly $295. Our special, only.. **$119.50**

FAUCET WATER HEATER

Instant hot water from any faucet for just pennies—sounds unbelievable—but it's true! You just slip MASTER MECHANIC'S new Faucet Water Heater over any water faucet, plug it in a wall outlet and you've got steaming hot running water instantly for dishes, shaving, washing baby's bottle, etc. Simple and safe—operates on ordinary 110v. house current—costs only 2½ cents per hour for hot water. Ideal for homes, barns, cabins, trailers, etc. Easily regulated from lukewarm to full hot. Fully guaranteed! (Item 400) Wt. 2 lbs. Factory price F.O.B. Burlington, only..... **$4.95**

52 pc. SOCKET SET

Highest quality, guaranteed non-breakable sockets made by Husky. Beautifully matched chrome thin wall alloy absolutely the best. Contains a complete set of 28 sockets in 1/2" drive, 3/8" drive and 1/4" drive, plus all necessary extensions, handles, speeders, reversible ratchets, etc.; all uncond. guaranteed against breakage. A beautiful set of tools that will handle any job; in a big doghouse steel box. Wt. 17 lbs. (Item 205) List price $62.90. Factory special.. **$29.95**

CABLE HOIST

2000 lb. CAPACITY. A fortunate purchase from the Air Force enables us to offer these brand new 2000 lb. electric cable hoists at a fraction of their value. Perfect for material handling, boat hoists, elevators, lifts on assembly lines, etc. Two separate 22 ft. lift cables with independent controls permit leveling the load and controlling it perfectly. Rugged ball bearing motors of geared down design 110 volts. Available for A.C. or D.C. Please specify. Makes a terrific portable hoist with our ±273 D.C. light plant at $99.75. Offered at less than 33⅓% of regular cost (Cable not included). Wt. 145 lbs.
A.C. Model, item 847A..... **$149.50**
D.C. Model, item 847..... **$129.50**

LESS THAN WHOLESALE

1500 WATT PLANT

115v. 60 cyc. AC Push Button Start. Powered by a 3½ HP. Clinton engine. Combines big output with easy portability. Provides emergency power for operating any oil burner, sump pump, freezer, television, lights, communications systems, etc. which require up to 1500 watts. (Item 22) Wt. 110 lbs. Reg. $475 value. Factory price... **$239.50**

1750 Watt Plant Powered by 4.5 Briggs engine. Electric starting & battery charging built-in! Factory price... **$279.50**

MASTER-LITE 2500 Watt Plant

(Item 21)

110/120 v. 60 cyc. AC. A powerful plant, ruggedly constructed and yet designed for easy portability. Can be started by rope or built-in 12 v. electric push button starter. Built-in winding to charge battery. Powered by a big 5.10 HP Briggs engine, complete with all accessories. Includes control box, voltmeter, and handy plug-in power receptacle. An ideal plant for permanent or stand-by service. Wt. 255 lb. Reg. price $646.00
(Item 21) Factory Price..... **$329.50**

3500 Watt Plant Push Button Start (Item 23) 115 v. 60 cyc. AC. Similar to above, but larger and 33⅓% more capacity. Wt. 270 lbs. Reg. $760. Factory Price..... **$379.50**

DUAL VOLTAGE 110/220 for Item 21 or 23 —$30 additional.

EXCLUSIVE! NEW!

LIGHTWEIGHT WATER COOLED DIESEL GENERATOR PLANT

Never before available! Now offered exclusively by Master Mechanic. A low priced, lightweight, continuous duty, Diesel generator set. Powered by a super rugged, exceptionally smooth running, one cylinder Diesel engine. Operates at conservative 1750 r.p.m. and delivers full 1750-2000 watts of power. Operates on low cost fuel oil. Wt. only 240 lbs. representing a triumph of Diesel Engineering. Complete with fuel filter, oil pressure gauge, control box with duplex receptacle and voltmeter. (Item 830)
Special factory price..... **$399.50**

DIESEL ENGINE only, as above described 3.5 HP (Item 830a) Wt. 116 lbs..... **$249.50**

Double Acting Hydraulic Cylinder

A powerful cylinder mfr'd. by Massey Harris which develops both a pushing and a pulling action. Will push 8,000 lbs. with a 1000 PSI pump pressure. Cylinder is 3⅝" O.D. with 8½" stroke—standard heavy duty clevises on both ends. Has standard 1/8" pipe thread openings. Can be used for tilting buckets or blades, raising or lowering implements, hydraulic presses, etc. Can also be used as an air cylinder. (Item 802) Wt. 7 lbs. Reg. $68 value, Special..... **$14.95**

OTHER DOUBLE ACTING CYLINDERS

8" stroke — 3" bore..... **$34.00**
10" stroke — 3" bore..... **34.80**
16" stroke — 3" bore..... **43.00**
24" stroke — 3" bore..... **47.50**

We have all sizes of cylinders available.

HYDRAULIC CONTROL VALVE — 4 way open center valve with built-in adjustable relief. Controls 1 double, or 2 single acting cylinders. Equalizing feature permits easy control even under heavy loads. ¾" pipe thread on inlet & outlet,—½" on cylinder outlets. Easily mounted, finger tip control. Wt. 18 lbs. (Item 822)..... **$21.95**

HYDRAULIC KIT

Complete Hydraulic Kit consists of hydraulic hand pump with built-in 2 gal. reservoir and item 802 hydraulic cylinder described above. Pump has a built in relief valve and is rated at 20 tons. Kit is ideal for presses, jacks, snow plows, etc. Pump is 29" long—5" diam. with ⅜" ports. A terrific value!
(Item 836). Wt. 50 lbs..... **$39.50**

Pump only (Item 836a) only..... **$23.50**

Send check or M.O. Prices f.o.b. Factory. 10 day Money back guarantee. SEND 10c for BIG NEW Catalog

MASTER MECHANIC MFG. CO., DEPT. 3-10 Burlington, Wis.

WHERE ACCURACY MEANS *Economy*

SOUTH BEND
14½" LATHES

HARDENED BED WAYS

Hardened and precision ground for longer life under severe operating conditions.

Specifications

Swing—14⅝" over bed and saddle wings.
Distances between centers—24½" to 60½" maximum.
Collet capacity—1" maximum.
Spindle bore—1⅜"
Spindle speeds—6, 8, 12 or 16 speeds, 15 to 875 r.p.m.
Longitudinal feeds—48
Cross feeds—48
Thread cutting range—48 pitches R.H. or L.H., 4 to 224 per inch.

SOUTH BEND ACCURACY GIVES YOU—

More output—no slow-up required to hold close tolerances. Fewer rejects—saves time and materials. Greater operating ease—less fatigue and effort. Top efficiency on every type of operation. Precision and smoothness that often eliminate subsequent grinding, honing or lapping operations. Prices of 14½" lathes start at $1975.

Send Catalog 5700 describing Engine, Toolroom and Turret Lathes; Milling Machines; Bench Shapers; Drill Presses; Pedestal Grinders and Attachments.

Name_____

Address_____

City & State_____

SOUTH BEND PAYMENT PLAN — SOUTH BEND

Up to 24 months to pay.

SOUTH BEND LATHE

Building Better Tools Since 1906
SOUTH BEND 22, INDIANA

Introducing the most practical tool you'll ever own!

NEW PORTER-CABLE

ELECTRIC HAND SAW WITH

ORBITAL ACTION!

The saw that does everything 3 TIMES FASTER!

This versatile tool is actually seven saws in one . . . it's a rip saw, cross-cut saw, coping saw, keyhole saw, scroll saw, jig saw and hack saw! It makes inside cuts without drilling a starting hole—has a comfortable handle, and cuts 2" dressed lumber, 1/4" aluminum and 1/8" steel. For hundreds of jobs—from rough-cutting to intricate scroll work, Porter-Cable's hand saw has no equal! Model 152 ..... $54.95

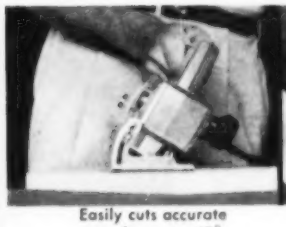
(Handy wall kit with accessories, $5 extra.)

World's only orbital action hand saw

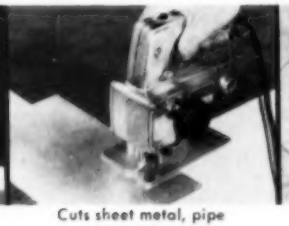
Most efficient cutting cycle! Blade moves ahead on cutting stroke – moves back and away on relief stroke. No dulling "drag" – blade runs cooler, lasts far longer, cuts faster.

IT CUTS

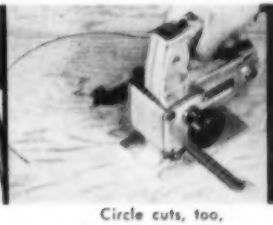
LUMBER
PLYWOOD
STEEL
PLASTICS
MASONITE
PLEXIGLAS
ALUMINUM
IRON
ASPHALT TILE
BRASS
BRONZE
COPPER
LEATHER
LINOLEUM
RUBBER
LUCITE



Easily cuts accurate angles up to 45°.



Cuts sheet metal, pipe bar stock quickly.



Circle cuts, too, perfectly and quickly.

Handy kit mounts on wall or workbench.

The most practical drill kit ever offered!

Porter-Cable's top quality Screwdriver Drill Kit handles the *two most important* jobs of a 1/4" drill . . . drilling holes and setting and driving screws. Here's what you get:

1. **Finest Screwdriver Attachment Built.** It's a top quality precision tool — not an ordinary, cheap drill accessory! Converts drill to a powerful screw driver simply by inserting attachment into the chuck. Regular and Phillips head bits included with Yankee-type clip to speed change of bits.
2. **Patented, Versatile Screw Setter.** It drills pilot holes for threaded portion and shank of screws, countersinks for screw head and counterbores *all in one operation!* Adjustable for every standard No. 8 screw. Stops automatically at correct depth.
3. **Genuine Porter-Cable Quality 1/4" Drill.** Model 161 has these expensive drill features; precision ground gear chuck, rugged motor, heavy duty bearings and much more.

Complete kit with high speed twist drills and welded steel carrying case. only $37.50

ORDER THESE TOOLS TODAY!

Send no money!
Take 6 months to pay!

PORTER-CABLE MACHINE COMPANY
Syracuse 8, New York

Please send me the units checked. I agree to pay down payment within 10 days and to pay the monthly balance as shown. It's understood that there will be no finance or interest charges added. And, if I should fail to make payment when due, the full unpaid balance shall become immediately due and payable.

Item	Price	Down Payment	Balance Monthly for 6 Months
☐ 152 Hand Saw	$54.95	$6.95	$8.00
☐ 152K Hand Saw Kit	59.95	8.95	8.50
☐ 161 SDK Drill Kit	37.50	7.50	5.00

Name _____

Address _____

City _____ Zone _____ State _____

In Canada: write Porter-Cable, Ltd., Box 5019, London, Ont. Canadian prices slightly higher.

NEW FROM

PORTER-CABLE

the power tool you've been waiting for!

FIRST CLASS
Permit No. 9
Sec. 34.9, P. L. & R.
Syracuse, N. Y.

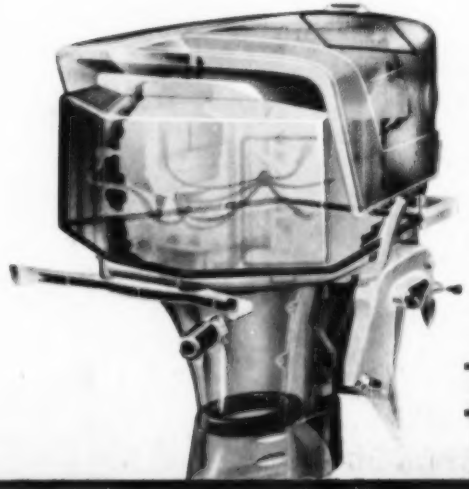
BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY

PORTER-CABLE MACHINE CO.

Syracuse 8, N. Y.

WE BOTTLED THE SOUND . . . AND SEALED IT!



Imagine driving a V-4 motor with power pulsations bottled and sealed in a sound-tight nacelle! No trace of vibration reaches the boat . . . it's smooth to the absolute! From crown of hood to waterline, engine and exhaust tubes are sealed tight . . . a new concept in quiet! It's Evinrude's Starflite V-4 with the "seal of silence." Starflite's perfectly balanced 50 hp 90° V-engine obsoletes other motors. Its advanced "over-square" short stroke, big bore engine (70.7 cu. in.) delivers instant, solid power that's beautiful to behold. See Starflite V-4 power . . . listen to Starflite quiet . . . at your Evinrude dealer (listed under "Outboard Motors" in your phone book). Catalog *free*. Write EVINRUDE MOTORS, 4168 N. 27th St., Milwaukee 16, Wis.

A Division of Outboard Marine Corporation
In Canada: Mfd. by Evinrude Motors, Peterborough

EVINRUDE

quiet outboard motors